

Comprehensive Operations Analysis Final Draft Report

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Existing Conditions Report

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OVERVIEW

The Existing Conditions Report provides an in-depth analysis of Roseville Transit's operations, encompassing various transit services, including fixed-route local buses, on-demand, and commuter services. The report synthesizes data from multiple sources, such as ridership figures, financial reports, operational data, and travel patterns, enhanced with machine learning and GPS data analysis. Roseville Transit operates a comprehensive service framework, offering six-day-a-week fixed-route services, specialized schedules for rural routes, and a GameDay Express service for events in Sacramento. The Existing Conditions Report includes the following sections:

- Service Framework
 - Mode Overview
 - System Performance by Mode by Year
 - Fare Overview
- Market Assessment
 - Regional Demographics
 - County Development
- Peer Review
- Financial and Cost Analysis

SUMMARY OF FINDINGS

SERVICE FRAMEWORK AND FARE STRUCTURE

Roseville Transit's service framework is diversified, with fixed-route services operating from Monday to Saturday, paralleled by Dial-A-Ride and commuter services on weekdays. The fare structure caters to a wide range of users, offering regular, discounted, and special rates for seniors, disabled individuals, and youth, as well as day and monthly passes. The service is anchored around major transit hubs, such as the Roseville Galleria and Civic Center.

1. Local Routes:

- Regular/Adult: \$1.50
- Youth (ages 5-18): \$1.50
- Seniors (60+), Disabled, and Medicare: \$0.75
- Children under 5: Free with paying adult

2. Commuter Routes:

- Regular/Adult: \$4.50 one-way/\$3.25 discounted
- Discounted fare for Seniors, Disabled, and Medicare: Often half of the regular fare.

3. Dial-A-Ride:

- Regular/Adult: \$3.75
- Seniors, Disabled, and Medicare: \$2.50

4. Passes:

- Day Pass for Local Routes: \$4.00 for regular/\$2.00 for discounted categories
- 10-ride local pass: \$15.00 for regular/\$7.50 discounted
- 10-ride commuter pass: \$45.00 for regular/\$32.50
- Monthly Local Pass: \$58.00 for local, \$29.00 for discounted categories
- Monthly Commuter Pass: \$155.00 for regular/\$110.00 discounted

SERVICE LEVELS AND EFFECTIVENESS

An analysis of service levels reveals varied trends. While the commuter service has seen a decline in service hours since its peak in 2012, the On-Demand service grew until 2016 before also declining. In contrast, the Fixed Route service has maintained stable revenue hours, indicating sustained demand. However, all services have experienced declines in passenger trips per revenue hour, with the commuter service facing the most significant decrease. This decline in service effectiveness is further mirrored in the farebox recovery ratios, which have dropped across all services, most notably in the commuter service.

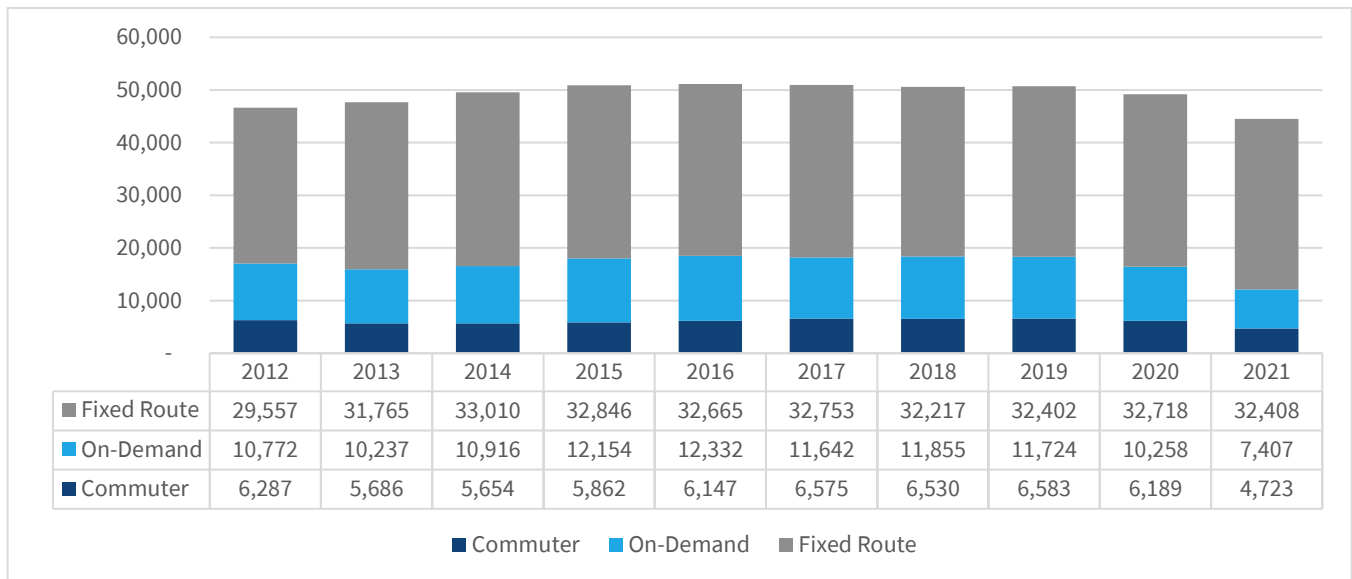


Figure 1 - Service Hours

After a peak in 2014 with an average of 23.1 trips per hour, the service experienced an 88.8% reduction in ridership by 2021, plummeting to just 2.6 trips per hour. This sharp decline in passengers per hour is notably more pronounced than the decrease in revenue hours for the same period, which was 24.9%. The disparity suggests that the reduction in ridership was not solely due to reduced service hours, indicating a larger issue with passenger demand or service efficiency.

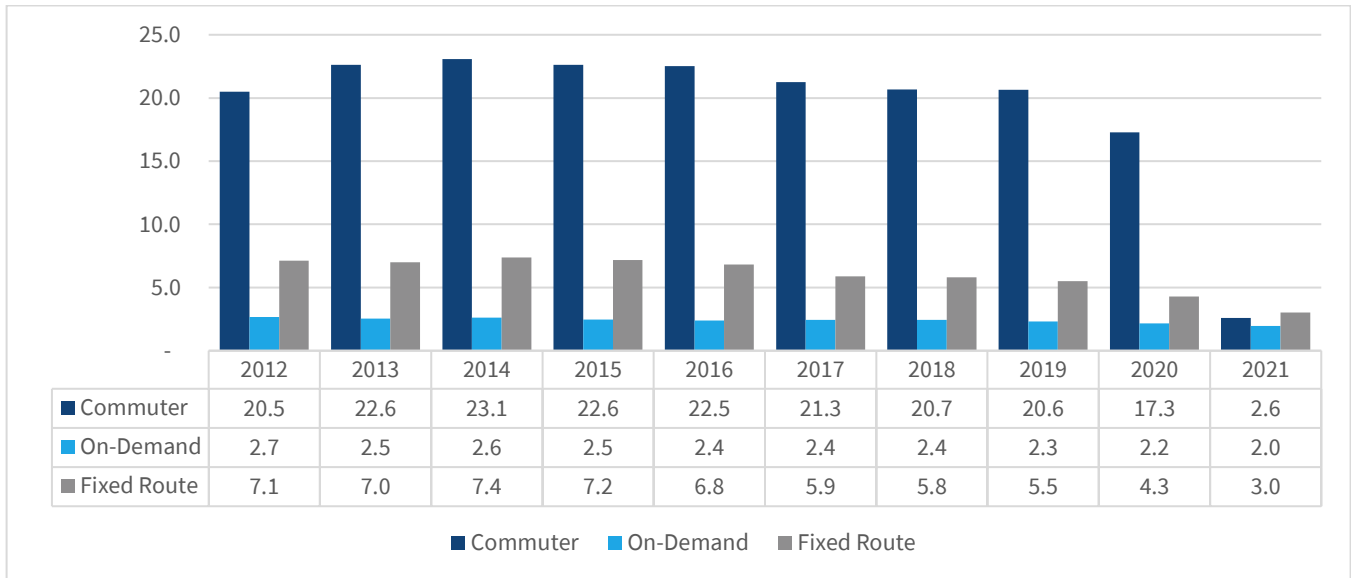


Figure 2 - Passenger Trips per Hour

In contrast, the On-Demand service demonstrated more stability. Starting from 2.7 trips per hour in 2012, it modestly declined to 2.0 trips per hour in 2021, a 25.9% decrease. This decline in ridership was less than the 40% reduction in revenue hours from its peak in 2016 to 2021, suggesting a relative consistency in ridership in proportion to the service's operational hours.

The Fixed Route service also experienced a decrease in ridership, from 7.1 trips per hour in 2012 to 3.0 trips per hour in 2021, a 57.7% reduction. This decline occurred despite only a marginal 1.8% decrease in revenue hours from its 2014 peak to 2021. The sustained revenue hours did not correspond to stable ridership numbers, indicating potential shifts in passenger demand or service efficiency for the Fixed Route service as well.

FINANCIAL OVERVIEW

The report indicates a steady increase in operating expenses across all services over the decade, with varying degrees of peaks and declines. The cost per revenue hour for Roseville Transit's services has shown an overall upward trend, with a significant spike in recent years. Additionally, there has been a dramatic increase in the subsidy per passenger, particularly for the Commuter service, which correlates inversely with the decrease in passenger trips per revenue hour.

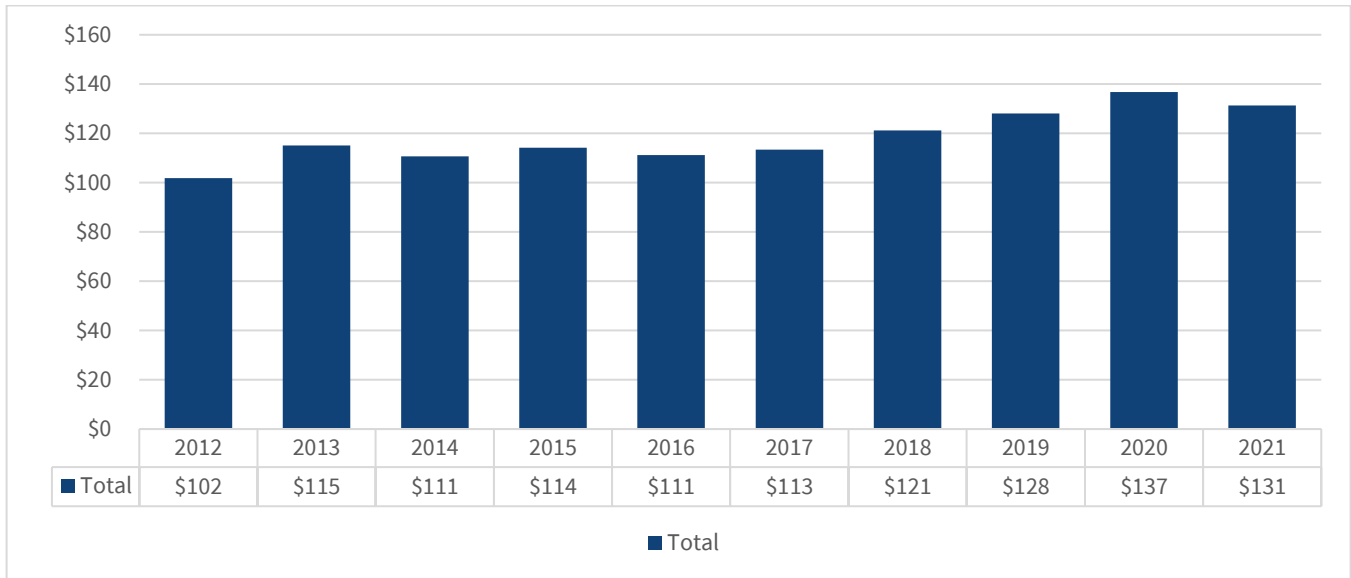


Figure 3 - Cost Per Revenue Hour

RIDERSHIP TRENDS AND OPERATING COSTS

System ridership has been significantly impacted by COVID-19, with a notable decrease across all services, especially in the commuter service. Daily ridership trends show a consistent demand during morning rush hours, an increase for non-commuting purposes during midday, a peak in the afternoon rush hours, and a decrease in the evening. The operating cost per passenger has increased substantially, primarily due to a reduction in ridership while operating expenses have seen only minor reductions.

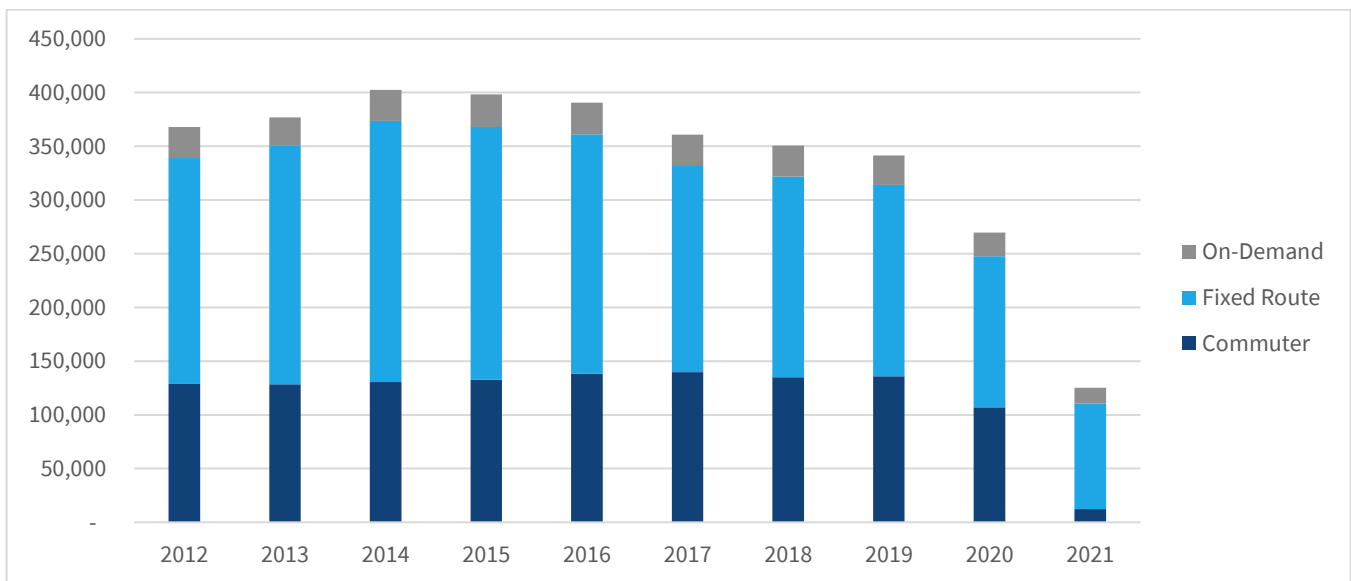


Figure 4 - Passenger Trips by Mode by Year

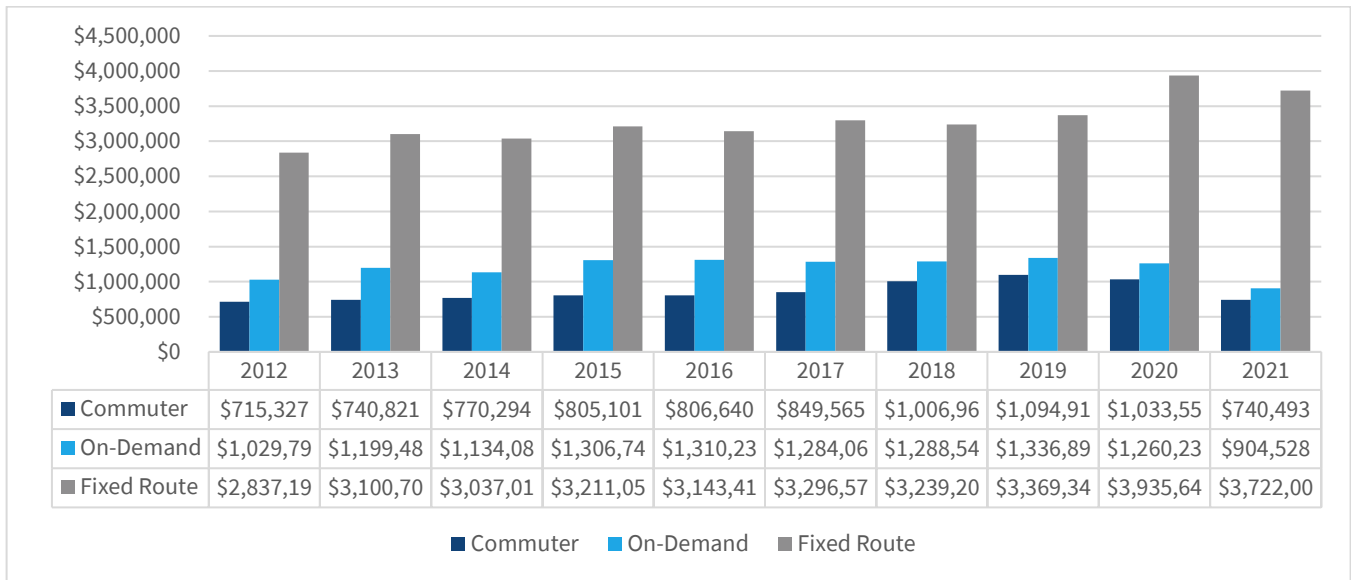


Figure 5 – Operating Expense by Mode

PEER REVIEW SUMMARY

Average Cost Per Revenue Hour: Roseville had competitive average costs, often on par with or slightly below several peer entities, like the City of Fairfield and Santa Rosa. In some years, Roseville's costs were notably lower than those of the County of Placer and El Dorado County Transit Authority.

Agency Name	Location
City of Fairfield, California	Fairfield
City of Roseville	Roseville
City of Santa Rosa	Santa Rosa
City of Tulare	Tulare
City of Union City	Union City
County of Placer	Auburn
County of Sonoma	Santa Rosa
El Dorado County Transit Authority	Diamond Springs
Livermore / Amador Valley Transit Authority	Livermore
Solano County Transit	Vallejo
Stanislaus County	Modesto
Transit Joint Powers Authority for Merced County	Merced
Ventura County Transportation Commission	Camarillo
Western Contra Costa Transit Authority	Pinole
Yolo County Transportation District	Woodland
Yuba-Sutter Transit Authority	Marysville

Table 1 - Peer List

Average Farebox Recovery Percentage: Roseville consistently reported lower farebox recovery percentages, indicating a heavy reliance on subsidies and other revenue sources. In contrast, entities like Fairfield and Santa Rosa reported higher farebox recovery percentages, suggesting a greater ability to cover costs through fare revenue alone.

Average Operating Expense Per Passenger Trip: Roseville had higher average operating expenses per passenger trip compared to most other entities, indicating relatively higher costs for each passenger trip. Several entities like Tulare and Ventura County Transportation Commission reported lower operating expenses per passenger trip, showing a more cost-effective approach.

TRAVEL PATTERNS

The travel patterns within Roseville Transit's network exhibit distinct trends throughout the day. During the morning rush hours, from 7:00 AM to 9:00 AM, passenger numbers are steady, reaching a peak of 18.5 passengers by 9:00 AM, indicating a consistent demand for transit services during this time, likely for commuting to work or school.

The midday hours, from 9:15 AM to 2:45 PM, show a notable rise in ridership at 10:00 AM with 17.2 passengers, and a significant midday peak occurs at 9:30 AM with 30.4 passengers. This suggests that the transit system is also used for non-commuting purposes, such as errands or midday appointments, as the passenger counts remain above 10 throughout most of this period.

As for the afternoon rush, from 3:00 PM to 6:45 PM, there is a substantial increase in ridership beginning at 2:00 PM, with the highest count of the day at 45.2 passengers at 3:00 PM. This heightened usage remains consistent until 6:45 PM, indicating a strong need for transit services as people likely return home from work or school.

In the evening, from 7:00 PM to 9:30 PM, ridership begins to decline, starting with 12.4 passengers at 7:00 PM and decreasing further by 9:30 PM. This tapering off in the evening reflects the end of the typical commute and daily activities, leading to a lesser demand for transit services.

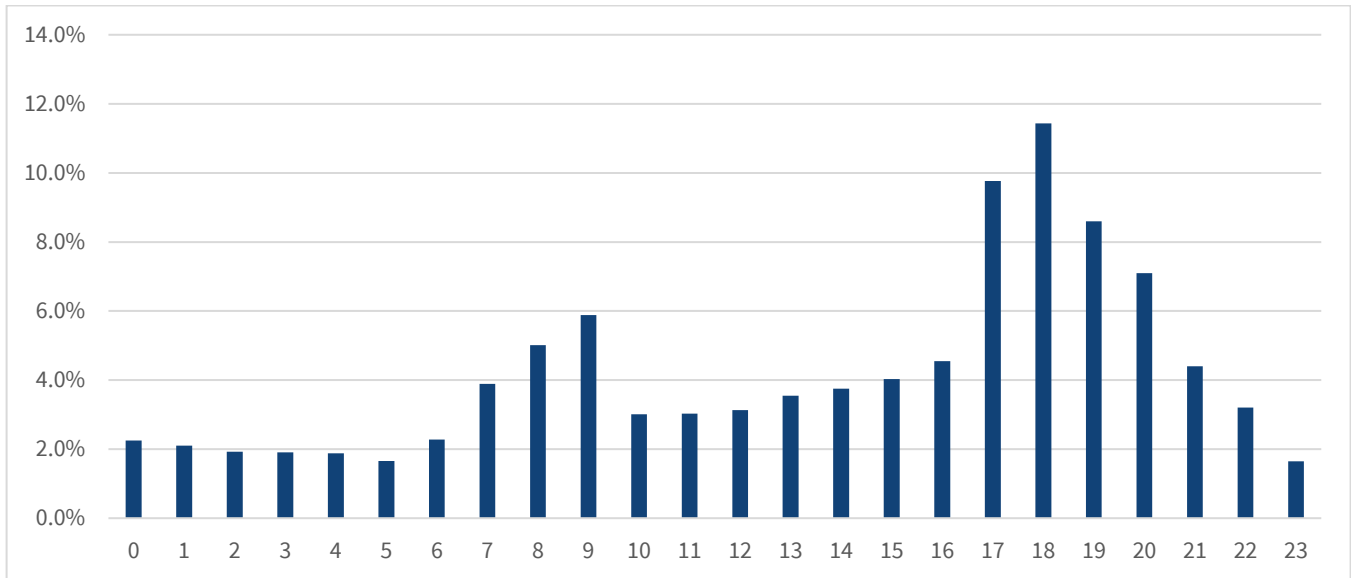


Figure 6 – Post-Pandemic Proportion of Trips by Hour

CONCLUSION

Roseville Transit faces significant challenges, including a drastic reduction in ridership, lower farebox recovery percentages, and increased subsidies per passenger, particularly in the commuter service. Despite competitive costs in some areas, the lower farebox recovery and higher operating expenses per passenger trip than peers highlight improvement areas. The report emphasizes the need for strategic planning and cost optimization to enhance efficiency and sustainability.

Service Framework

OVERVIEW

This Service Framework report provides a detailed overview of the current state and performance of Roseville Transit, encompassing various transit services, including fixed-route local buses, on-demand, and commuter services. The analysis integrates data from diverse sources such as ridership figures, financial reports, operational data, and travel patterns, leveraging machine learning algorithms for in-depth insights.

Roseville Transit operates a comprehensive service framework, with fixed-route services available six days a week, paralleled by Dial-A-Ride services and specific schedules for rural routes. The commuter services are weekday-specific, and a GameDay Express service is offered for select events in Sacramento. The fare system is structured to cater to different user categories, with regular and discounted rates for seniors, disabled individuals, and youth. These vary depending on the route and service type, with local transfers often free and inter-service transfers requiring additional fees.

Analyzing service levels reveals diverse trends. The commuter service, peaking in 2012, saw a decrease in service hours by 2021, while the On-Demand service grew until 2016 before declining. The Fixed Route service maintained stability in revenue hours. However, the effectiveness of these services has seen challenges. Passenger trips per revenue hour have declined across all services, with the Commuter service experiencing the most significant decrease. The On-Demand service remained relatively stable, whereas the Fixed Route service also witnessed a ridership decline.

Financially, all services demonstrated a decline in the Farebox Recovery Ratio over the decade, with the Commuter service facing the most dramatic drop. Operating expenses increased across all modes, peaking in recent years before a decline in 2021. The subsidy per passenger showed a significant increase across all services, particularly in the Commuter service. System ridership also declined across all services, notably in Commuter and Fixed Route services.

Ridership patterns, as revealed by farebox data, indicate consistent demand during morning rush hours, transit use for non-commuting purposes during midday, peak ridership during afternoon rush hours, and a gradual decrease in the evening.

DATA COLLECTION METHODOLOGY

The data to support the analysis herein was collected through several sources, which were then combined, corroborated, and analyzed.

Boardings and Alightings – Known as “ridership,” was collected by combining Connect Card data, GFI data, and Roseville Transit reports.

Financial information – Fares, expenses, and subsidies; this data was obtained from Roseville Transit reports.

Operational data – Service Hours, miles, on-time performance, key locations served- was obtained from Roseville Transit reports.

On-Demand Data – Trip requests completions; this data was obtained for 2019 and 2020 from reports provided by the on-demand service provider.

Travel Pattern Data – Data was obtained from GPS providers who utilize apps and non-smartphone pings and compile the data geographically. Custom machine-learning algorithms organized this disaggregated, de-identified data into trips. Data is validated by comparing it against census and Roseville Transit ridership data.

All data was mapped using the Census 2020 base map.

SERVICE FRAMEWORK

In general, Roseville Transit’s fixed-route services operate Monday through Saturday. Dial-A-Ride, now known as “The Arrow” operates hours similar to fixed-route services. Rural routes have a varied schedule. Some routes run daily, and others only Tuesday to Thursday. Commuter service runs weekdays only from the major park and rides in the service area into Sacramento. The service operates AM peak into Sacramento and PM peak returning to Yuba and Sutter counties. Roseville Transit also operates a GameDay Express services, which is available for select games/events at the Golden 1 Center in Sacramento. The express bus transported attendees from Roseville directly to the arena.

Roseville Transit’s local services are centered around major transit hubs: such as the Roseville Galleria, Civic Center, Louis and Orlando Transfer Center, and Taylor Road. The following tables outline Roseville Transit’s operating hours, services, and frequencies.

FARE STRUCTURE

Roseville Transit offers a comprehensive fare structure for its network of services. Roseville Transit's fare structure includes regular/adult fares, discounted fares for seniors, disabled individuals, and youth, and other fare types such as day passes and monthly passes.

1. Local Routes:

- Regular/Adult: \$1.50
- Youth (ages 5-18): \$1.50
- Seniors (60+), Disabled, and Medicare: \$0.75
- Children under 5: Free with paying adult

2. Commuter Routes:

- Regular/Adult: \$4.50 one-way/\$3.25 discounted
- Discounted fare for Seniors, Disabled, and Medicare: Often half of the regular fare.

3. Dial-A-Ride:

- Regular/Adult: \$3.75
- Seniors, Disabled, and Medicare: \$2.50

4. Passes:

- Day Pass for Local Routes: \$4.00 for regular/\$2.00 for discounted categories
- 10-ride local pass: \$15.00 for regular/\$7.50 discounted
- 10-ride commuter pass: \$45.00 for regular/\$32.50
- Monthly Local Pass: \$58.00 for local, \$29.00 for discounted categories
- Monthly Commuter Pass: \$155.00 for regular/\$110.00 discounted

5. Transfers:

- Local Transfers are permitted at the following transfer points: Galleria, Louis Orlando
- Transfer from Roseville Transit to PCT: 1 free transfer per day if customer has a Roseville Transit Day pass or 30-Day Pass used to board PCT at Galleria or Louis Orlando
- Transfer from PCT to Roseville Transit: 1 free transfer per day if customer has a PCT Transfer Pass, Day Pass, 14-Day Pass or 30-Day Pass used to board Roseville Transit at Galleria or Louis Orlando

- Transfer from Roseville Transit to SacRT: 1 free transfer per day if customer has a Roseville Transit Day Pass or 30-Day Pass used to board SacRT at Louis Orlando
- Transfer from SacRT to Roseville Transit: 1 free transfer per day if customer has a SacRT Day Pass, Semi-Monthly Pass or Monthly Pass used to board Roseville Transit at Louis Orlando
- If boarding a commuter service from a local service or vice versa, the full fee pertaining to the service and type of ride selected would need to be paid

SERVICE LEVELS

Several patterns and trends emerge in examining the revenue hours data for the city of Roseville's transit services over the years. For the **Commuter** service, 2012 is the peak year with 6,287 revenue hours. However, from this high point, there has been a notable decrease over the years, culminating in the lowest figure in 2021 at 4,723 hours. The decline in commuter ridership, is almost entirely due to the COVID-19 pandemic and the ensuing lockdowns and work from home orders. It should be noted, while many pandemic-era regulations have been lifted, the shift for many businesses to a work-from home model has not changed. For Roseville Transit, which serves a number of State of California offices in Downtown Sacramento, the work from home shift has resulted in dramatic reductions in ridership.

The **On-Demand** service presents its unique trajectory. Starting from 2012, there was a consistent growth in revenue hours, reaching its zenith in 2016 with 12,332 hours. Post-2016, a gradual decline is observable, and by 2021, the revenue hours had dropped significantly to 7,407. This reduction, especially in the latter years, indicates potential changes in the demand or provision of on-demand transit services.

In contrast, the **Fixed Route** service demonstrates a more stable trend. After an initial growth phase that peaked in 2014 at 33,010 revenue hours, the service has maintained a relatively consistent performance. The years following 2014 have seen the numbers oscillating around the 32,000-hour mark. This consistency underscores the sustained demand and stability of the fixed route services in Roseville over the years.

While the Fixed Route service has remained a steady pillar in Roseville's transit system, Commuter and On-Demand services have witnessed fluctuations, with noticeable declines in recent years. Factors like changes in transit policies, infrastructure, or the broader impacts of events such as the COVID-19 pandemic are the main reasons for these trends.

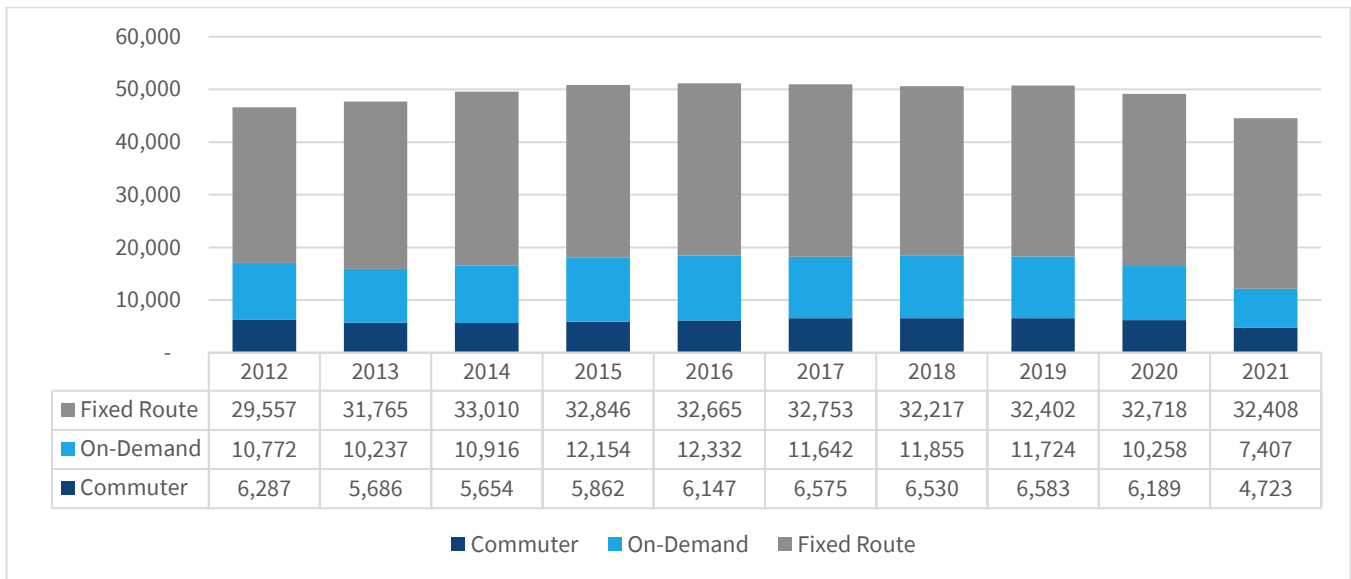


Figure 7 - Service Hours

Examining the revenue hours for the city of Roseville's transit services reveals distinct trends over the years, punctuated by notable percentage changes. The Commuter service peaked in 2012 with 6,287 hours and experienced a decline of 24.9% by 2021, reflecting decreased usage and service modifications.

Conversely, the On-Demand service saw an upward trajectory initially, growing by 14.5% from 2012 to its peak in 2016. However, this service witnessed a considerable decline of 40% from its 2016 peak to 2021.

PEAK VEHICLES OPERATED

For the Commuter service, the number of vehicles remained constant at eight for the majority of the entire period being reduced to seven vehicles due to the pandemic. This consistency contrasts with the revenue hours for the same service, which showed a decline of 24.9% over the years. Despite the drop in hours, the number of vehicles available for the Commuter service remained unaffected, suggesting that the service might be operating below its full potential or there might be a shift in operational efficiency.

The On-Demand service observed fluctuations, albeit minor. Starting with 6 vehicles in 2012, there was a decrease to 5 vehicles from 2013 to 2016, marking a 16.7% reduction. The count later increased to 6 vehicles from 2017 to 2019 and again reduced to 5 in 2020. However, by 2021, the count returned to 6. This variation in vehicle numbers parallels the revenue hours trend, which had an initial growth of 14.5% to its peak in 2016 and then a 40% decline by 2021. The vehicle count aligns with the demand and service availability over the years.

The Fixed Route service showcased stability, with a consistent ten vehicles operating each year. Interestingly, this stability in vehicle count aligns with the trend in revenue hours, which initially grew 11.7% to its peak in 2014 and then maintained with minor fluctuations, declining only 1.8% by 2021.

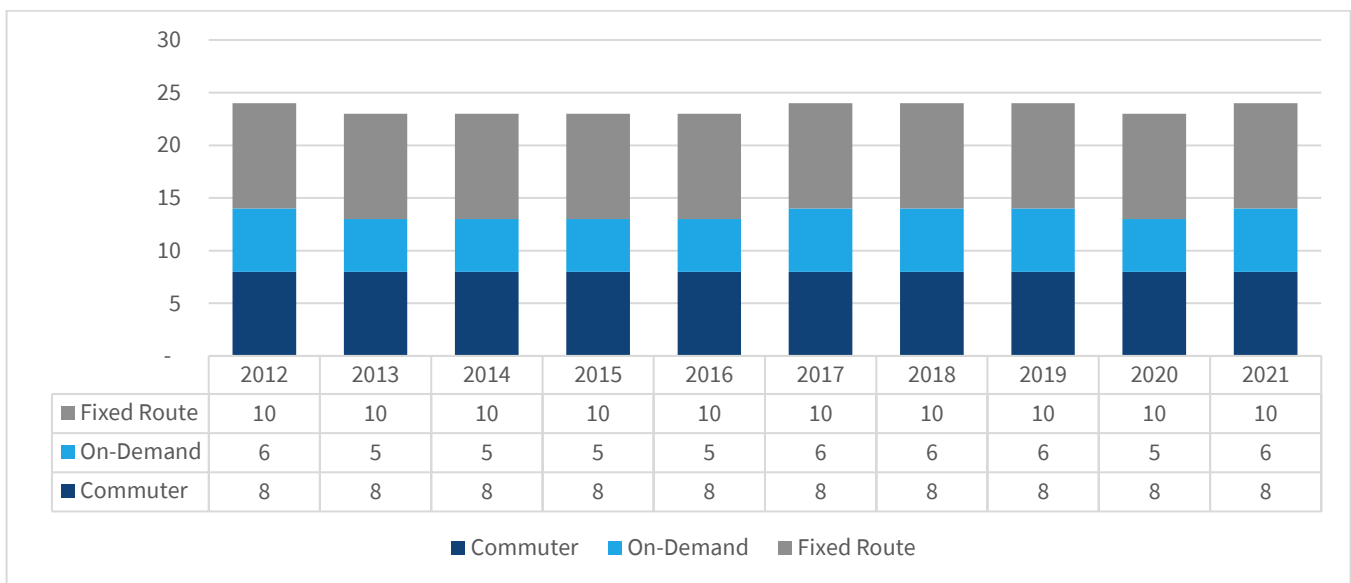


Figure 8 – Peak Vehicles Operated by Year by Type

SERVICE EFFECTIVENESS

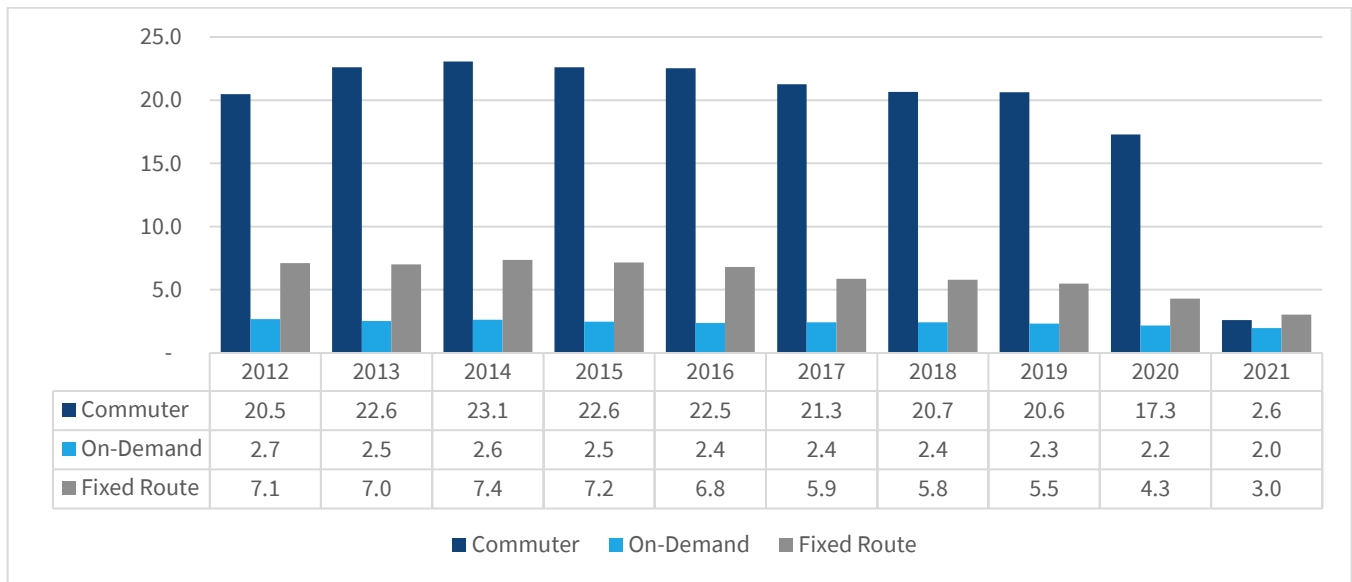


Figure 9 - Passenger Trips per Hour

Starting with the Commuter service, we observed a general downward trend over the decade. After peaking in 2014 with 23.1 trips per hour, there was a decline of approximately 88.8% by 2021, reaching just 2.6 per hour. This significant decrease contrasts with the revenue hours analysis, which showed a 24.9% decline from 2012 to 2021. Even though the revenue hours decreased more modestly, the passenger trips per hour drastically reduced.

The On-Demand service maintained relative stability in its numbers. From its start in 2012 with 2.7 trips to 2.0 trips in 2021, the decrease is around 25.9%. Compared to its revenue hours, which had a 40% decline from its peak in 2016 to 2021, the trips per hour for On-Demand dropped at a lesser rate, indicating a moderate consistency in ridership relative to the hours of operation.

Lastly, the Fixed Route service also presented a decline. From 7.1 trips per hour in 2012, it decreased to 3.0 by 2021, marking a reduction of about 57.7%. The disparity is evident when set against the revenue hours, which had a marginal decline of 1.8% from its 2014 peak to 2021. The consistency in revenue hours did not translate into steady ridership, pointing to potential changes in passenger demand or service efficiency.

While all three services saw declines in passenger trips per revenue hour, the severity and pace varied. The Commuter service experienced the most significant drop, disproportionate to its decrease in revenue hours. The On-Demand service's decline in trips per hour was more aligned with its revenue hours decrease, showing relative stability. Despite a marginal drop in revenue hours, the Fixed Route saw over half its ridership per hour decline over the years.

FAREBOX RECOVERY RATIO

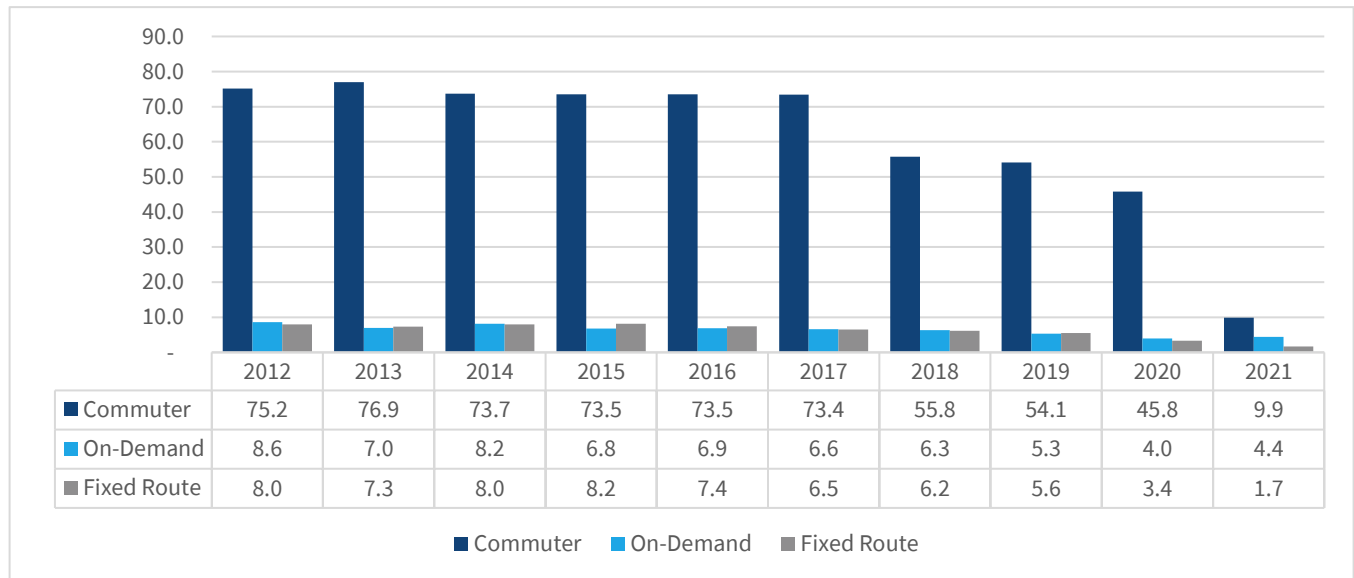


Figure 10 - Farebox Recovery Ratio

For the Commuter service, the farebox recovery began robustly at 75.2% in 2012 and peaked slightly in 2013 at 76.9%. However, post-2014, a downward trend ensued. By 2018, the rate had fallen to 55.8%, marking a decline of 24.2% from its peak. The trend accelerated dramatically, and by 2021, it dropped to 9.9%, representing an 87% decline from the 2013 peak. When juxtaposed with the revenue hours analysis, which had a reduction of 24.9% over roughly the same period, the farebox recovery ratio's decline is steeper.

The On-Demand service started with a farebox recovery of 8.6% in 2012. Over the years, this figure fluctuated marginally but generally trended downwards. By 2021, the rate stood at 4.4%, translating to a decline of 48.8% from its initial value. Comparing this with the On-Demand revenue hours, which decreased by 40% from its 2016 peak to 2021, the farebox recovery's rate of decline aligns more closely.

For the Fixed Route service, the farebox recovery ratio consistently declined over the years. It began at 8.0% in 2012, reached a slight high of 8.2% in 2015, but then decreased to 1.7% by 2021 due to the pandemic. This represents a decline of 78.8% from its 2015 peak. When this data is compared to the Fixed Route revenue hours, which had a marginal 1.8% decline from its 2014 peak to 2021, the farebox recovery ratio's decline is significantly more pronounced.

All three services demonstrated a decline in their farebox recovery ratios over the decade, with the Commuter service witnessing the most dramatic drop. Notably, while the Commuter and Fixed Route services experienced more severe farebox recovery declines than their respective changes in revenue hours, the On-Demand service saw a farebox recovery rate drop that was more aligned with its reduction in revenue hours.

OPERATING EXPENSE BY MODE

Commuter service expenses began at \$715,327 in 2012 and increased steadily through the decade, peaking at \$1,094,917 in 2019, marking a 53% increase from the starting value. However, by 2021, the expense saw a significant dip to \$740,493, roughly equating to its 2013 level due to lower operating levels during the pandemic and a lack of bus operators.

For On-Demand, the expenses commenced at \$1,029,790 in 2012, reaching their zenith in 2019 at \$1,336,892, a rise of approximately 29.8%. A slight decline was observed in 2020; by 2021, it reduced to \$904,528, reflecting a 12.2% decrease from the 2019 peak.

Fixed Route operating costs initiated at \$2,837,196 in 2012, increasing consistently to their highest in 2020 at \$3,935,649, an elevation of 38.7%. However, 2021 saw a slight reduction to \$3,722,004.

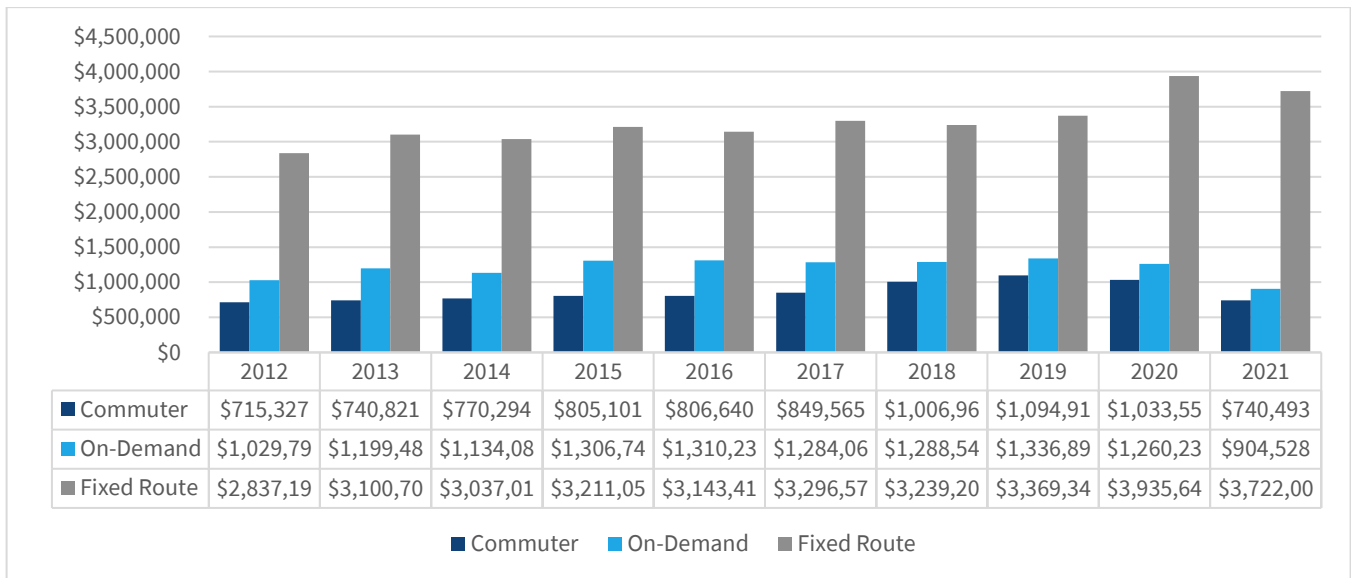


Figure 11 – Operating Expense by Mode

Cost per revenue hour measures the cost of operating each revenue hour on Roseville Transit’s services. Over the ten-year span, the cost per revenue hour has a clear upward trend. In 2012, the cost started at \$102 per revenue hour. The figure then increased, reaching \$115 in 2013. There was a slight decrease in the following year to \$111 in 2014, and then the expense fluctuated modestly between \$111 and \$114 over the next three years. A more pronounced upward trend began in 2017, with the cost reaching \$113 and climbing steadily each year to \$137 in 2020, which represents the peak for the period and a 34.3% increase from the starting value of 2012. In 2021, there was a slight decrease to \$131 per revenue hour, but still substantially higher than at the beginning of the decade.

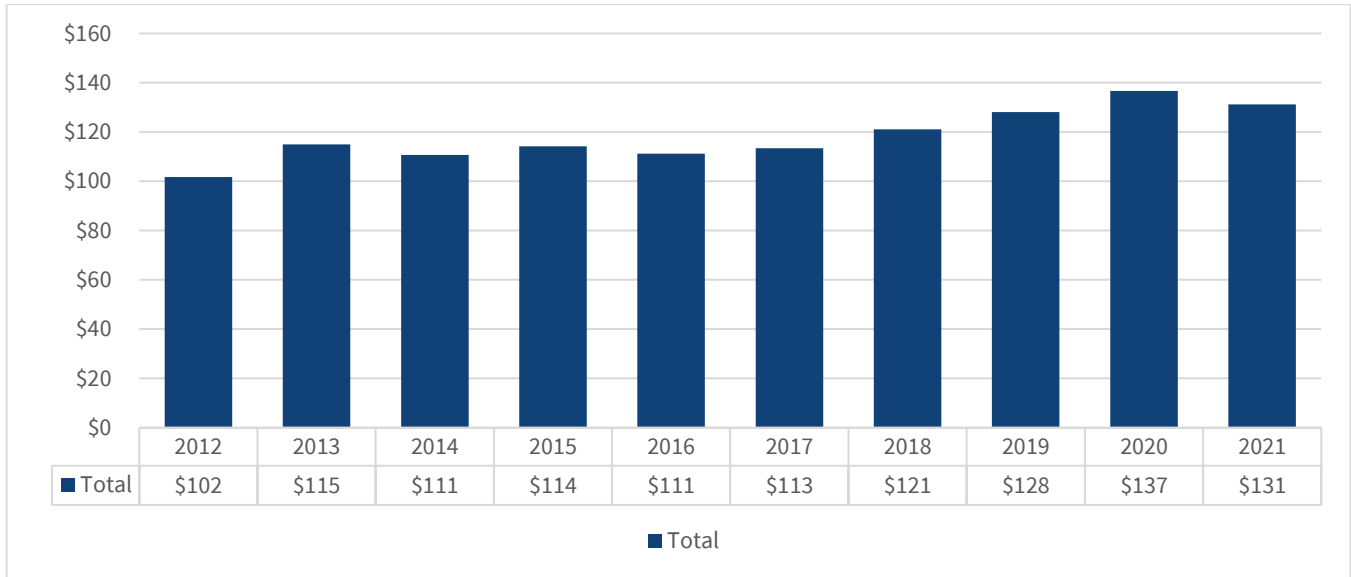


Figure 12 - Cost Per Revenue Hour

SUBSIDY PER PASSENGER

For the Commuter service, the subsidy started at \$1.38 in 2012. There was a slight decrease in 2013, but from 2014 onwards, there was an upward trend. The most significant jump occurred between 2018 and 2019, from \$3.30 to \$3.70, and escalated dramatically to \$54.37 in 2021. This represents an increase of over 3800% from the starting value in 2012.

The Fixed Route service's subsidy per passenger began at \$12.41 in 2012. It experienced fluctuations in the earlier years but started a steady increase from 2016 onwards, peaking at \$37.24 in 2021. This is an approximate increase of 200% over the 10-year period.

For the On-Demand service, the subsidy started at \$32.63 in 2012 and showed an overall increasing trend, reaching \$59.64 in 2021. This equates to an increase of around 82.8%.

When comparing these figures to the number of passenger trips per revenue hour analyzed earlier, there is an and should be an inverse relationship between subsidies and passenger trips. For the Commuter service, the passenger trips per revenue hour decreased by 88.8% from the peak in 2014 to 2021, while the subsidy increased substantially. The Fixed Route service showed a decrease in passenger trips per revenue hour of 57.7% from the peak in 2015 to 2021, with the subsidy per passenger concurrently increasing. The On-Demand service also followed this pattern, with a decrease in passenger trips per revenue hour of 25.9% from the start of the period to 2021 and an increase in subsidy per passenger.

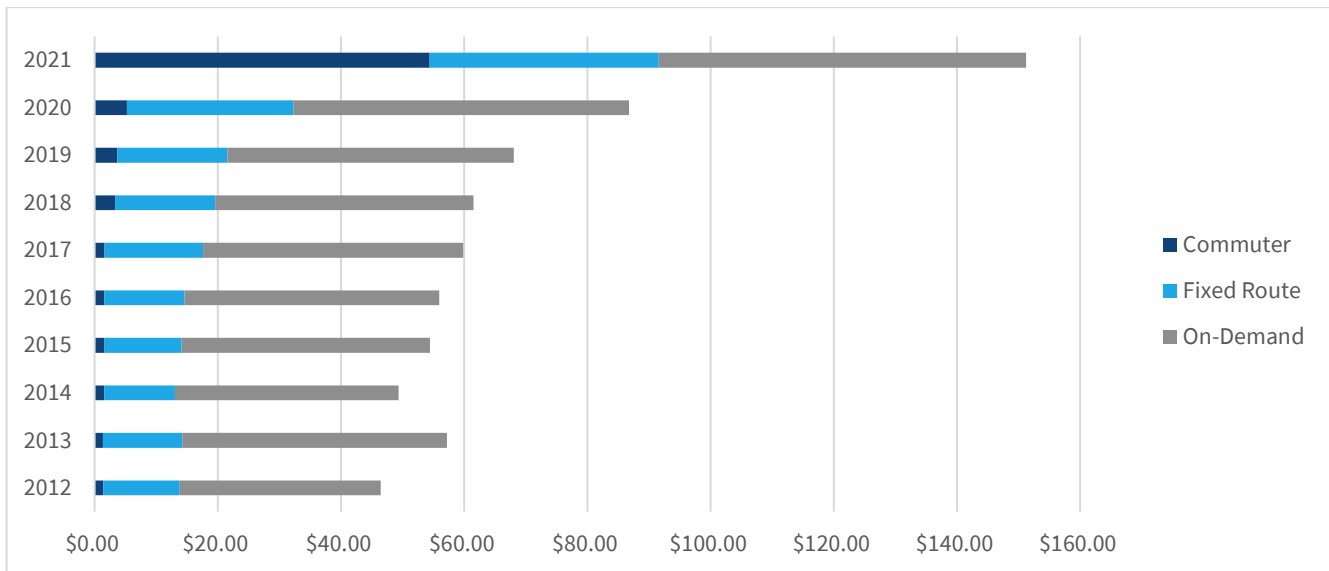


Figure 13 - Subsidy per Passenger

SYSTEM RIDERSHIP

This section covers ridership, which measures the total number of trips taken by customers on Roseville Transit's network.

Like many other agencies nationwide, COVID-19 significantly impacted Roseville Transit's daily ridership across the entire network. For the Commuter service, passenger trips were relatively stable from 2012 to 2019, ranging between approximately 128,000 and 139,000 trips annually. However, there was a significant decrease in 2020 to 106,948 trips and an even more pronounced drop in 2021 to just 12,271 trips. This represents a decrease of 90.5% from 2020 and a decrease of 90.5% from its highest recorded number in 2017.

The Fixed Route service saw a gradual increase in ridership, peaking in 2014 with 243,298 trips before beginning a declining trend. By 2021, the number of passenger trips had dropped to 98,290, a decrease of 59.6% from the peak in 2014 and 30.1% from the previous year.

Ridership for the On-Demand service fluctuated slightly over the years but remained within 28,000 to 30,000 trips until 2019. Similar to the other services, there was a decline in 2020, and by 2021, the passenger trips had reduced to 14,497, which is a 49.5% decrease from 2020 and a 52.1% decrease from its peak in 2015.

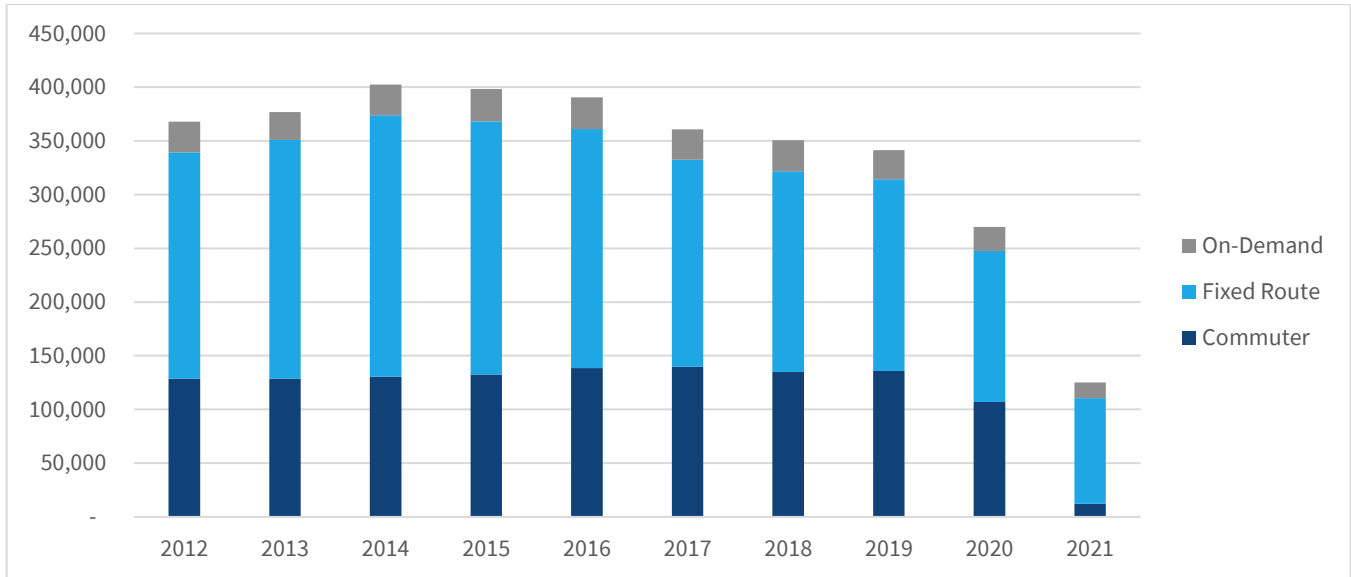


Figure 14 - Passenger Trips by Mode by Year

Using farebox data, ridership by day was also analyzed.

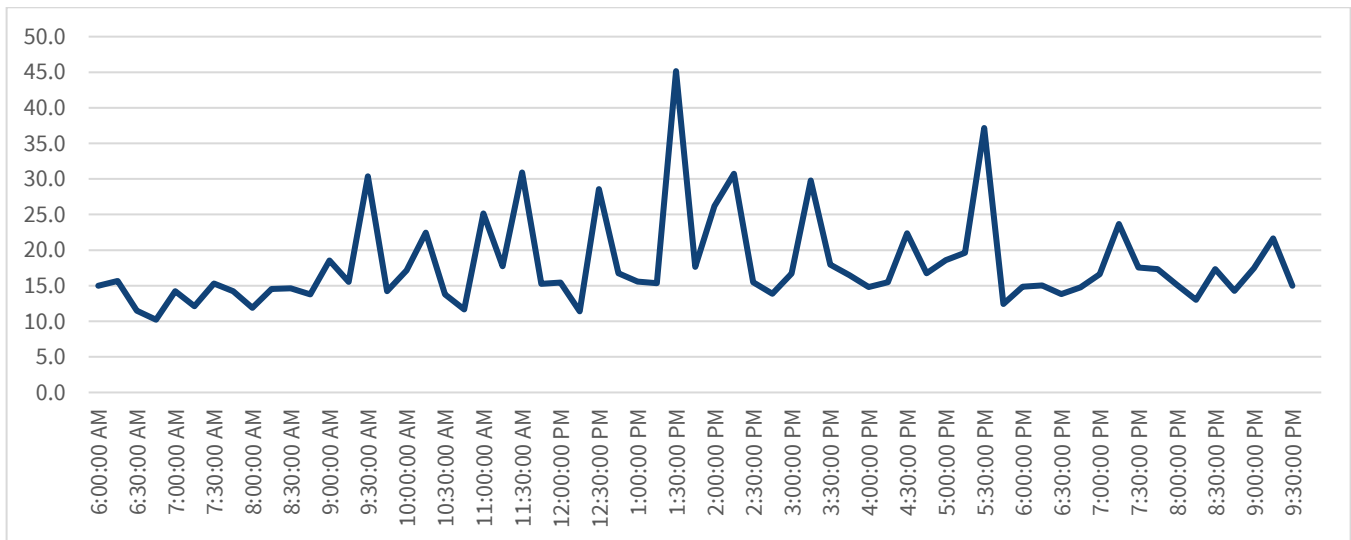


Figure 15 - Ridership by Time of Day

Morning Rush (7:00 AM - 9:00 AM): The numbers remain relatively steady, peaking at 18.5 passengers at 9:00 AM. This suggests a consistent demand during the morning commute hours.

Midday (9:15 AM - 2:45 PM): There is a noticeable increase at 10:00 AM with 17.2 passengers and a midday peak at 30.4 passengers at 9:30 AM, which could indicate transit use for non-commuting purposes. The passenger count remains above 10 for most of the midday period.

Afternoon Rush (3:00 PM - 6:45 PM): The afternoon commute starts picking up at 2:00 PM, with the highest day count at 45.2 passengers at 3:00 PM. This peak remains consistent with a high count until 6:45 PM.

Evening (7:00 PM - 9:30 PM): Ridership begins to taper off, starting at 7:00 PM with 12.4 passengers and decreasing to 15 passengers by 9:30 PM.

FINANCIAL PERFORMANCE

The Commuter service's average fare started at \$4.17 in 2012 and fluctuated. The fare increased to \$5.97 in 2021, a 43.2% increase from the starting fare. The average fare for the Commuter service across the years was \$4.51.

The On-Demand service's average fare began at \$3.09 in 2012, fluctuated mildly throughout the period, and ended at \$2.75 in 2021. This represents a decrease of 11% from the starting fare. On-Demand's total average fare over the ten years was \$2.90.

The Fixed Route service average fare decreased from \$1.08 in 2012 to \$0.63 in 2021, a decline of 41.7%. The overall average fare across the years for Fixed Route was \$1.01.

The Grand Total average fare across all services began at \$2.78 in 2012, with minor fluctuations in the subsequent years, reaching \$3.12 in 2021, an increase of 12.2% from the 2012 fare. The grand total average fare over the decade was \$2.80.

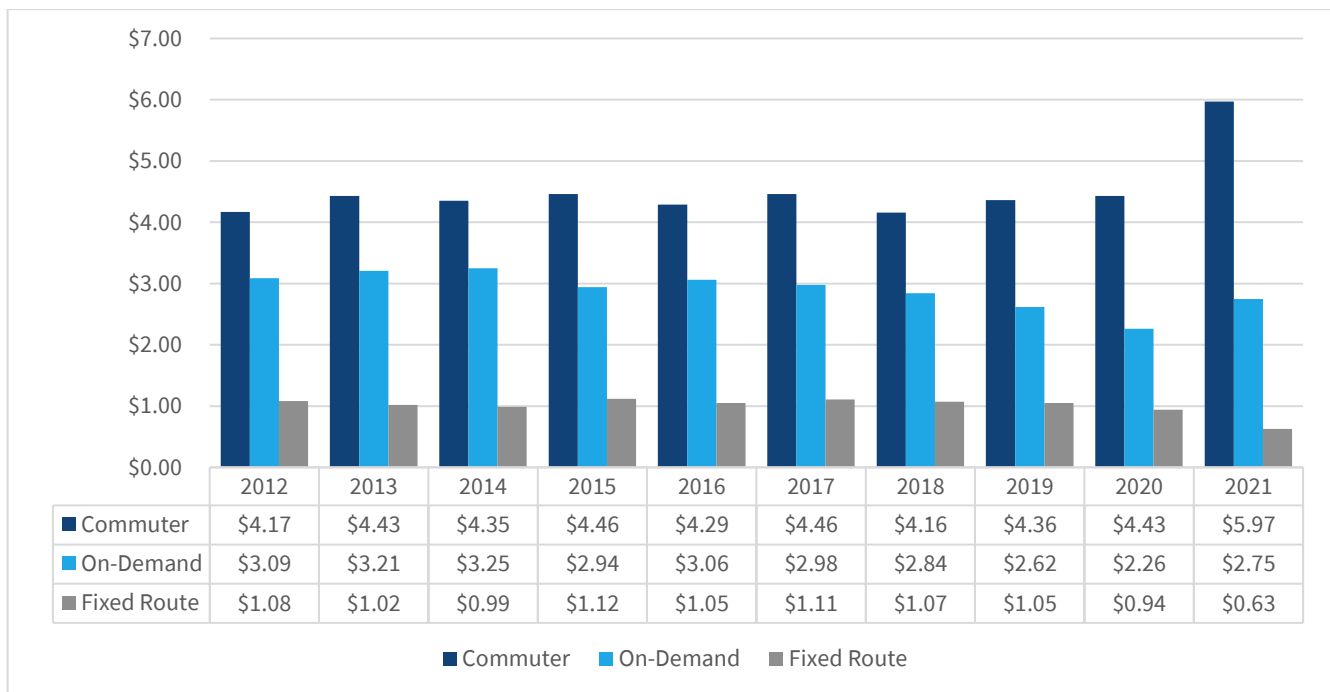


Figure 16 – Average Fare per Passenger

Operating cost per passenger increased 10-fold over the past decade. This is mainly because ridership is cut nearly in half, but operating expenses are only a tiny reduction. Commuter: Starting at \$5.55 in 2012, the cost per trip for the Commuter service increased steadily each year, with a significant spike in 2021 to \$60.34, which is a substantial increase of 987% from 2020 and 986.5% from its 2012 cost. The average cost across the years for the Commuter service was \$12.07.

Fixed Route: The cost per trip began at \$13.49 in 2012 and showed a generally increasing trend, with some fluctuations. The most notable rise occurred in 2020 and 2021, with costs reaching \$37.87 in 2021, a 137% increase from 2020 and a 181% increase from 2012. The total average cost over the ten years for Fixed Route was \$18.69.

On-Demand: Starting at \$35.71 in 2012, the cost per trip for the On-Demand service increased each year, with the price per trip peaking at \$62.39 in 2021. This represents a 74.6% increase from 2020 and a 74.7% increase from its initial 2012 cost. The total average cost over the years for On-Demand was \$46.74.

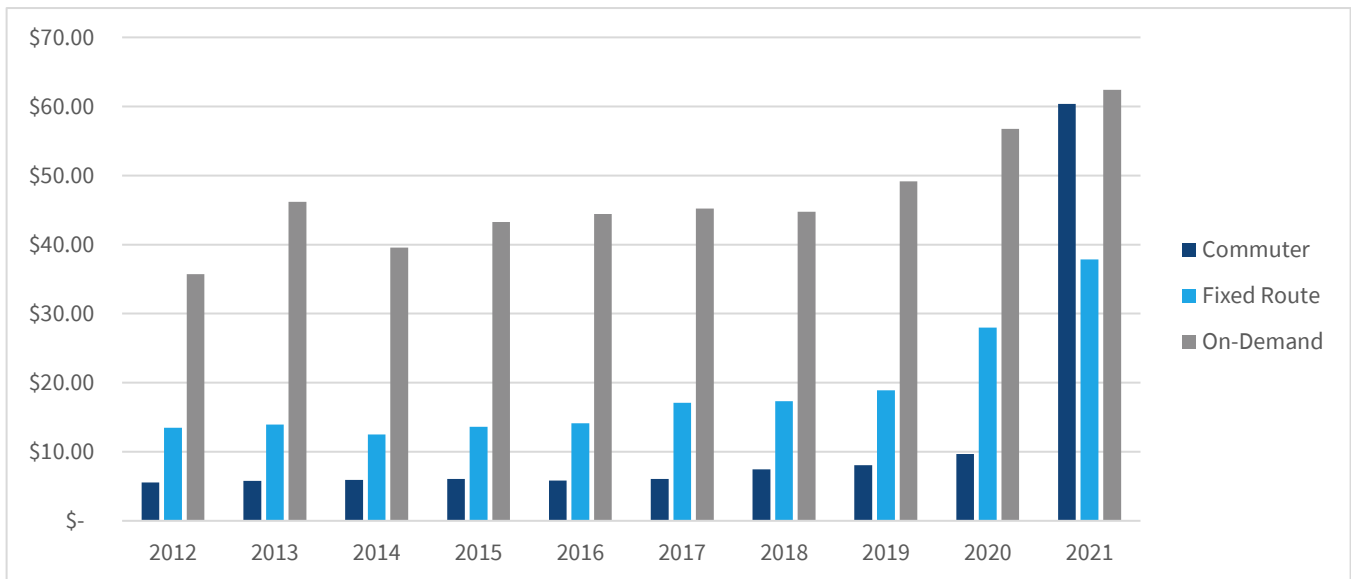


Figure 17 – Average Cost per Passenger

Market Assessment

INTRODUCTION

In an era of rapid socioeconomic changes and evolving market dynamics, a thorough understanding of regional characteristics becomes vital for informed decision-making and strategic planning. This Market Assessment report aims to provide a comprehensive analysis of key demographic, economic, and social indicators in Roseville and its surrounding areas, with a focus on understanding the intricacies and trends that define this region.

At the heart of this assessment lies a detailed exploration of various factors such as population growth, age distribution, income levels, employment trends, racial and ethnic diversity, education levels, and poverty rates. The report synthesizes data from multiple credible sources to paint a holistic picture of the region's current state and potential future directions.

One of the critical findings of this report is the substantial population growth in Roseville over the past decade, coupled with significant changes in income levels and employment patterns. The area exhibits a dynamic economic landscape, marked by a rising median household income and a diversifying job market. However, this economic growth has not been evenly distributed, as indicated by persistent poverty in certain areas and among specific demographic groups.

The demographic analysis reveals a diverse and evolving community, with notable shifts in racial and ethnic compositions and aging trends. This demographic shift has profound implications for urban planning, social services, and community engagement strategies. Furthermore, the report delves into the impact of recent global events, such as the pandemic, on employment trends, including the rise in remote working and its consequences on the local economy and real estate market.

REGIONAL OVERVIEW

Roseville presents a profile of an adult, predominantly driving, ethnically diverse, and relatively affluent community. This profile suggests that the city has a stable economic base, with a well-off population that may require specific services tailored to their demographic characteristics, such as a focus on adult education, traffic, and transportation planning, cultural inclusivity programs, and maintaining a high standard of living.

California boasts a substantial population of over 39 million, with Placer County accounting for 412,300 and Roseville for 141,492. The age demographics indicate that in Roseville, a relatively small percentage of the population is under 18 (25,414) or over 65 (23,661) compared to state averages, suggesting a predominantly adult population.

Commuting Patterns: A significant majority of the population in Roseville prefers driving alone (61,407), consistent with broader trends in California and Placer County. Public transit use is minimal (940), and a small fraction has no vehicles available (2,192), which may reflect the nature and the necessity for personal vehicles.

Disabled Population: The disabled population in Roseville is noted to be 654, a smaller proportion than the larger entities of Placer County and California. This might affect city planning and accessibility services.

Ethnicity: Ethnically, Roseville is diverse, with a sizeable Hispanic population (23,569) and significant numbers of White (108,233) and Asian (15,756) residents. This ethnic distribution somewhat reflects the more essential trends in California and Placer County, albeit with its unique mix, which may have implications for cultural services and community planning.

Housing: Roseville has 54,089 total housing units, with 5,771 multi-unit structures, suggesting a preference for single-unit dwellings. The average household size is 2.7, consistent with suburban family living. Owner-occupied housing is significant (34,259 units), indicating a stable residential community.

Income: The median household income in Roseville is notably high at \$140,156, surpassing both Placer County and California. This higher income is reflected in the smaller percentage of individuals living below the poverty line (11,973) and the more significant percentage of households earning above \$100,000 (51.10%). This suggests a relatively affluent community with potentially higher spending power and economic stability.

Table 2 – Population and Demographics (2021)

Population and Demographics	California	Placer County	Roseville
Total Population	39,346,023	412,300	141,492
Age			
Under 18	8,711,118	68,666	25,414
Over 65	5,644,497	98,759	23,661
Commuting			
Drive Alone	13,376,951	175,645	61,407
Take Public Transit	908,392	2,339	940
No Vehicles Available	570,526	5,654	2,192
Disabled Population	4,146,951	1,686	654
Ethnicity			
White Alone	16,296,122	318,448	108,233
Black Alone	2,237,044	7,614	3,139
Asian Alone	6,085,947	31,196	15,756
Hispanic Alone	15,579,652	60,439	23,569
Two or more races	5,760,235	20,204	7,415
Housing			
Total Housing Units	14,210,945	167,799	54,089
Housing Units in multi-unit structures*	3,760,415	11,883	5,771
Average household size	3	2.67	2.7
Owner-occupied housing units	7,241,318	105,372	34,259
Income			
Median Household Income	111,622	90,179	140,156
Individuals living below the poverty line	4,853,434	29,324	11,973
Less than \$25,000	15.50%	11.00%	10.50%
\$25,001-\$50,000	17.00%	13.1%	12.20%
\$50,001-\$100,000	27.60%	25.60%	26.20%
>\$100,000	39.90%	50.30%	51.10%

DEVELOPMENT

The City of Roseville, California, has been actively planning for urban development across various commercial, residential, and industrial sectors. Here's an overview of the significant developments:

- **Specific Plans and Development Agreements:** Roseville has outlined sixteen subareas for urban development, which include the Infill Area, the North Industrial Area, and fourteen specific plan areas. A Specific Plan is a comprehensive document that guides the development of a defined geographic area with a mix of uses, including residential, commercial, industrial, and public spaces like schools and parks. These plans contain detailed regulations, conditions, programs, and design criteria unique to each area, intending to implement the General Plan
- **Active Projects of Interest:** Some of the active projects in Roseville include:
 - **Oak Creek BMX Flood Encroachment Permit:** This project, located in the Infill area of the city, involves the operation of the Oak Creek BMX Facility and includes a request for a Flood Encroachment Permit.
 - **Sprinter Roseville:** This project involves the development of an approximately 97,000-square-foot Mercedes Benz Sprinter van sales and service facility at 1513 Eureka Road and 1411 Rocky Ridge Drive. It includes site improvements like landscaping, lighting, and parking.
 - **Sunset Area Plan and Placer Ranch Specific Plan:** This development project is set in an 8,497-acre area in unincorporated Placer County, located between Roseville, Rocklin, and Lincoln. The Sunset Area Plan aims to create a unique employment, entertainment, and education center. It proposes various land use types, including innovation center, general commercial, entertainment mixed-use, business park, eco-industrial, and light industrial. The Placer Ranch Specific Plan within this area includes approximately 8.5 million square feet of commercial, employment, and university-related non-residential use. It also proposes about 5,600 homes, educational facilities, open spaces, and a town center, ultimately intended to become a major job center.

- **Blue Oaks Retail Center Phase 2 (Dutch Bros / Chick-fil-A):** This project, located at the corner of Blue Oaks Boulevard and Woodcreek Oaks Boulevard would include six freestanding commercial buildings ranging between 950 and 13,200 square feet in size; two of the commercial buildings are proposed with a drive-through (Chick-fil-A and Dutch Brothers), the remaining building tenants are unknown at this time. The project was approved by the Planning Commission on March 23, 2023. Construction has recently begun on this project.
- **Phillips Road Site:** Processing of the originally proposed Roseville Industrial Park application is paused as Panattoni Development seeks community input on the future use of the 183 developable acre property at the northeast corner of Phillip Road. In response to neighbor concerns, Panattoni held a series of 12 “Listening Tour” meetings throughout the summer to meet with residents and collaborate on the development of a new shared vision for the Phillip Road Site. Panattoni held a report back meeting with the community to summarize public outreach efforts on October 5, 2023. With 183 developable acres, the Phillip Road site is large enough to accommodate a variety of uses that will result in economic prosperity for the region. Panattoni is committed to working with all stakeholders to identify uses that make sense for the neighborhood, the City, and the site itself. As with any proposed project, the City wants to see a positive contribution both to the local economy and quality of life of our residents. If significant changes to the project description occur, there is the potential for additional environmental analysis and the possible need to recirculate the Draft Environmental Impact Report (DEIR) for public comment. The City of Roseville will continue to notify all interested parties of the next steps.
- **West Roseville Marketplace:** In November 2023, the Planning Commission approved development of a 76,000 square foot shopping center on 8.80 acres on the northeast corner of Pleasant Grove Boulevard and Fiddymont Road. The project would include a 55,592 square foot Safeway, 13,950 square feet of inline shops, one freestanding building with a gas station, and a freestanding drive-through building. A modification to the original project is currently in process to allow a McDonald’s with a drive thru on Pad B. Construction documents have been submitted for the project and are currently under review. Construction is expected to begin in late 2023 or early 2024.

- **Baseline Marketplace – Costco:** In April 2023, the City approved Costco’s application to develop a new 160,529 square foot Costco warehouse building along with a fuel facility and car wash located at the northwest corner of Baseline Road and Fiddymont Road. Offsite civil improvement plans are being reviewed by the Engineering division and building permits are being reviewed by the Building division. Costco has informed staff that they intend to bid off-site improvement work in October in order to be underway as soon as possible in early 2024. Costco anticipates a late Spring/early Summer 2025 store opening.
- **Erikson Senior Living facility:** An application has been submitted to allow construction of a 2.1 million square foot continuing care retirement community on a 55.6-acre site consisting of Sierra Vista Specific Plan (SVSP) Parcels KT-41A and KT-41B north of Baseline Road between Santucci and Westbrook Boulevards. The project includes a total of 1,200 independent living units, 40 skilled nursing beds, and 200 assisted living/memory care beds in buildings up to six stories in height. The project is expected to be developed in six phases, the first of which will consist of approximately 624,000 square feet. The project plans were approved by the Planning Commission on July 13, 2023, and the Development Agreement was approved by the City Council on September 6, 2023.
- **Sprinter Roseville:** The Sprinter Roseville project would allow the construction of a Mercedes Benz Sprinter Van sales and service facility on nearly six acres at 1513 Eureka Road. The project includes a 97,604 square foot building, 47 service bays, four detail bays, two levels of service bays, and two levels of parts storage, and a parking area for 325 vehicles. The project was approved by the Planning Commission on September 28, 2023, and will tentatively be presented to the City Council in November for the final necessary approvals.
- **Electric Pickle,** located at 290 Conference Center Drive, adjacent to the Galleria Mall and Highway 65, is a new two-story, 12,000 square foot restaurant with nine outdoor pickle ball courts (four covered), 2 bocce ball courts, and other outdoor amenities. The project is part of the Roseville Junction development, which is expected to include several restaurants, two hotels, and a potential beer garden. Electric Pickle was approved by the Planning Commission on September 14, 2023. Construction documents for Roseville Junction are currently in review. Roseville will be the second Electric Pickle location in the nation.

These projects reflect residential, commercial, and industrial development, showcasing the city’s commitment to growth and modernization while addressing community needs and sustainability.

POPULATION

Over the last decade, from 2011 to 2021, Roseville experienced a consistent increase in its total population, growing from 122,688 to 151,901. This marks a total increase of 23.8% over ten years, reflecting a sustained and healthy growth rate for the city.

Breaking down the data year by year, the growth appears to be steady rather than sporadic, suggesting ongoing factors contributing to the population rise rather than a single event. Specifically, from 2011 to 2012, there was a 1.6% increase. The following year, 2013, saw an increase of 1.9%. Each subsequent year up to 2016 showed similar modest growth rates of around 1-2%.

However, in 2017, the population growth rate increased slightly to 1.8%, followed by an even more significant increase of 2.3% in 2018. This trend continued, with 2019 seeing a 2.3% increase. Then, between 2019 and 2020, there was a significant jump, with the population growing by 4.6%, the most significant single-year increase in the decade. Finally, from 2020 to 2021, the growth rate slowed to 2.3%.

This gradual increase could indicate Roseville's strong economic opportunities, housing development, and overall livability, attracting new residents. The spike in growth rate in 2020 might be attributed to specific events or initiatives in that year that made Roseville particularly attractive or available to newcomers. The city's continuous population growth, especially the significant rise in the latter part of the decade, underscores the importance of strategic urban planning and resource allocation to maintain the quality of life for its residents.

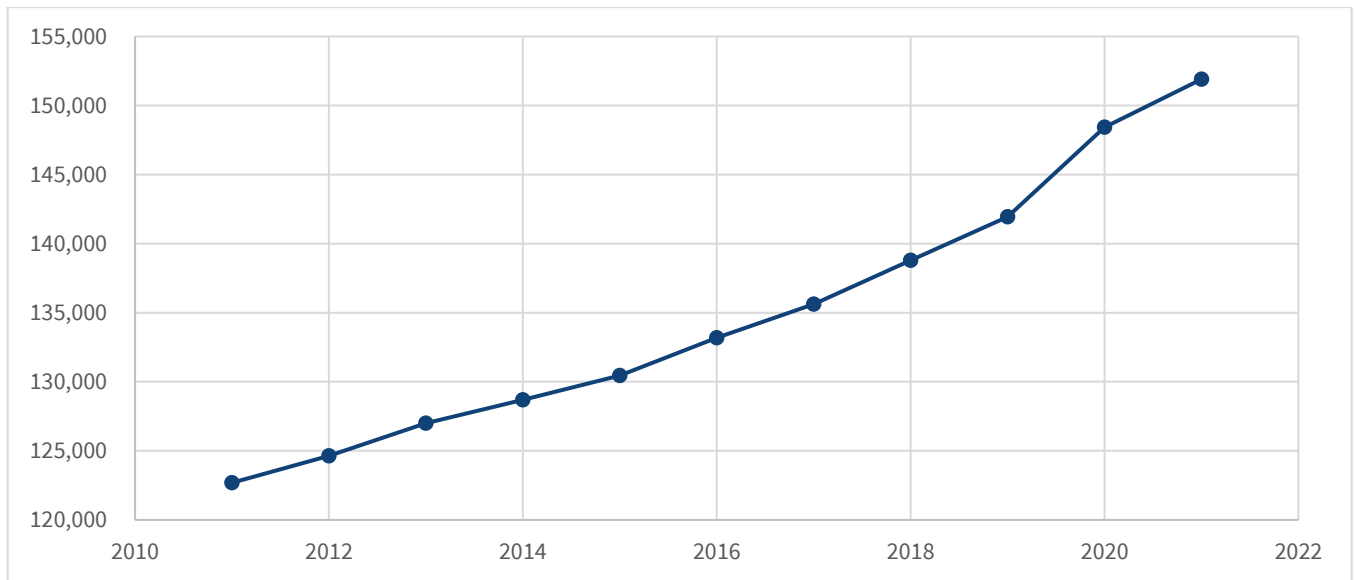


Figure 18 – Total Population

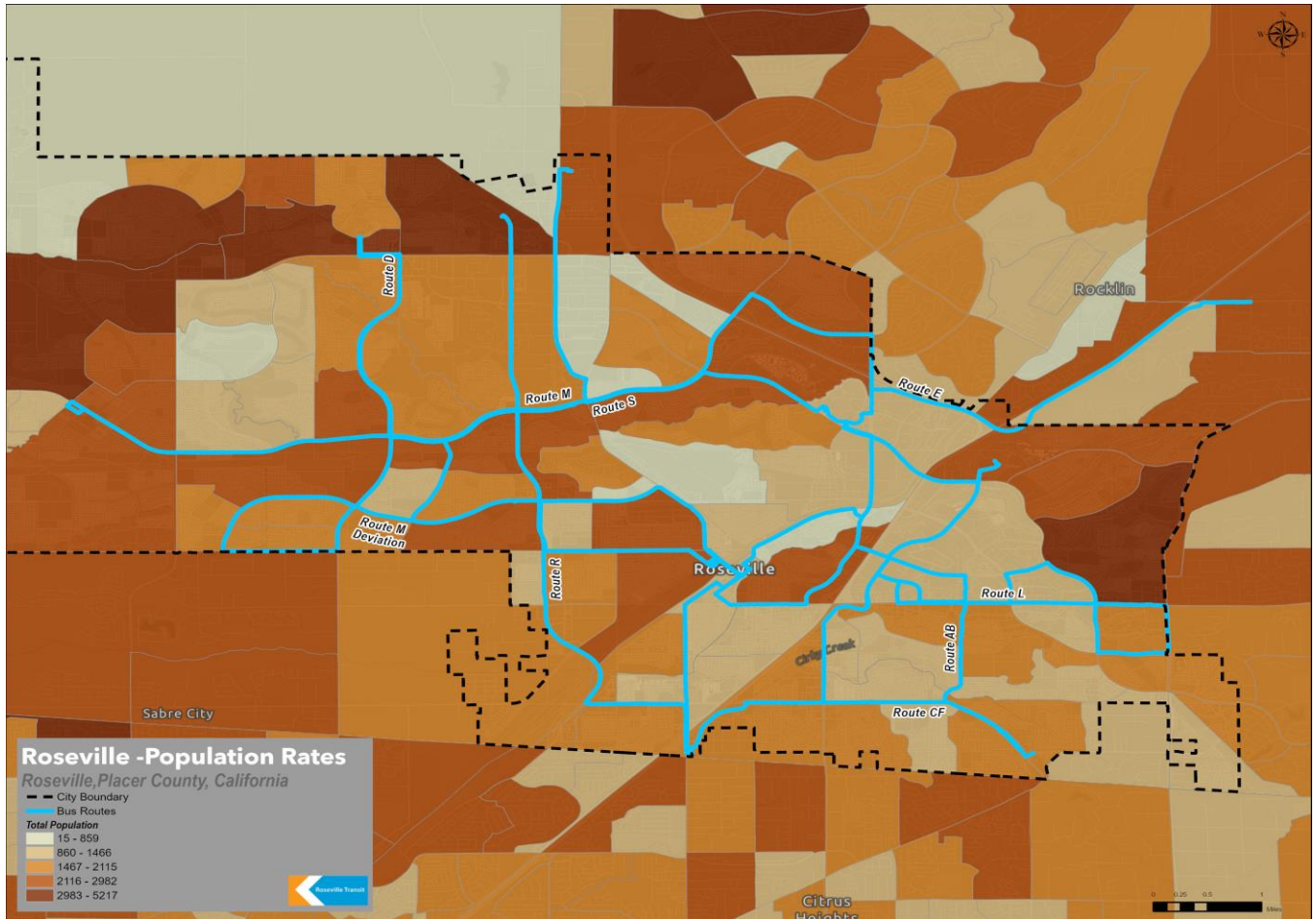


Figure 19 - Service Area Population

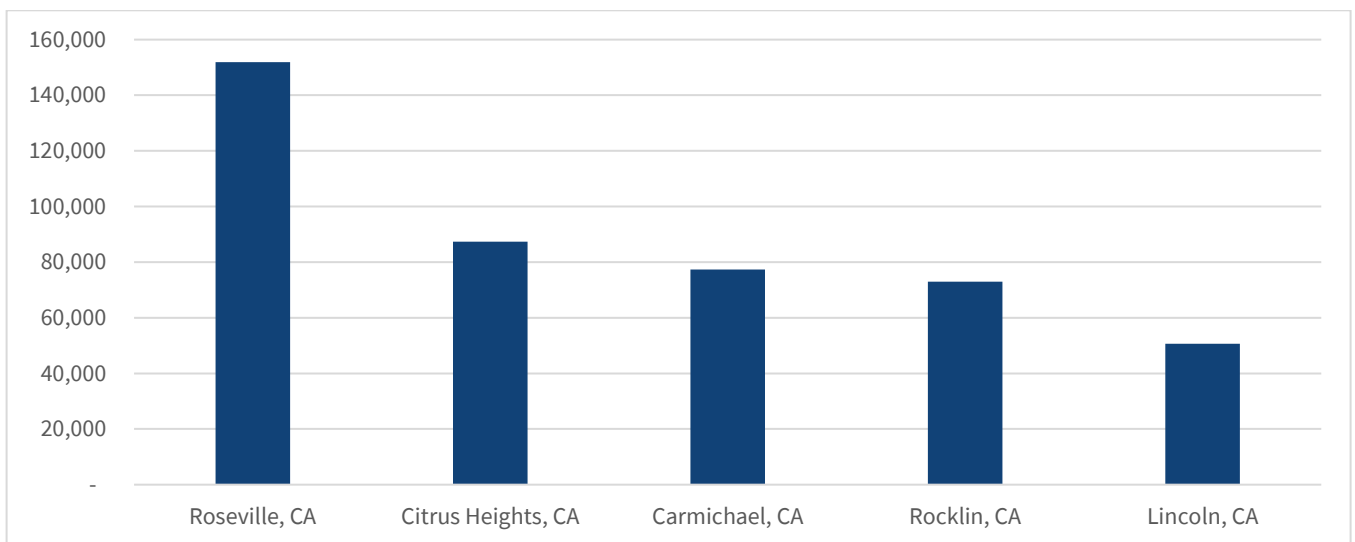


Figure 20 - Population of Surrounding Cities

POPULATION BY AGE GROUP

Over the decade from 2011 to 2021, Roseville's population experienced growth across all age groups, indicating a thriving community. The youngest demographic, those under 18, saw a moderate increase of 9.4%, rising from 23,236 to 25,414. The 18-24 age group also experienced growth, with a 15.4% rise, suggesting that the city might be retaining or attracting young adults post-high school or during college years.

The city seems particularly appealing to those in the 25-34 age range, with a 23.2% increase, possibly due to job opportunities or attractive living conditions for young professionals. Similarly, the 35-44 and 45-54 age brackets saw increases of 18.0% and 17.5%, respectively, which might reflect a population settling into their careers and family life in the area.

Significantly, the most substantial growth occurred in the older segments of the population. Individuals aged 55-64 showed a dramatic increase of 56.2%, while those 65-74 grew by 65.8%, and the oldest residents, aged 75 and above, saw a 37.5% increase. This trend points towards an aging population, which could affect Roseville's healthcare, housing, and social services.

The steady population rise across all age groups suggests economic growth and a city that can attract and maintain a diverse age demographic. Yet, the data also underscores the necessity for future planning to accommodate the burgeoning needs of its aging residents.

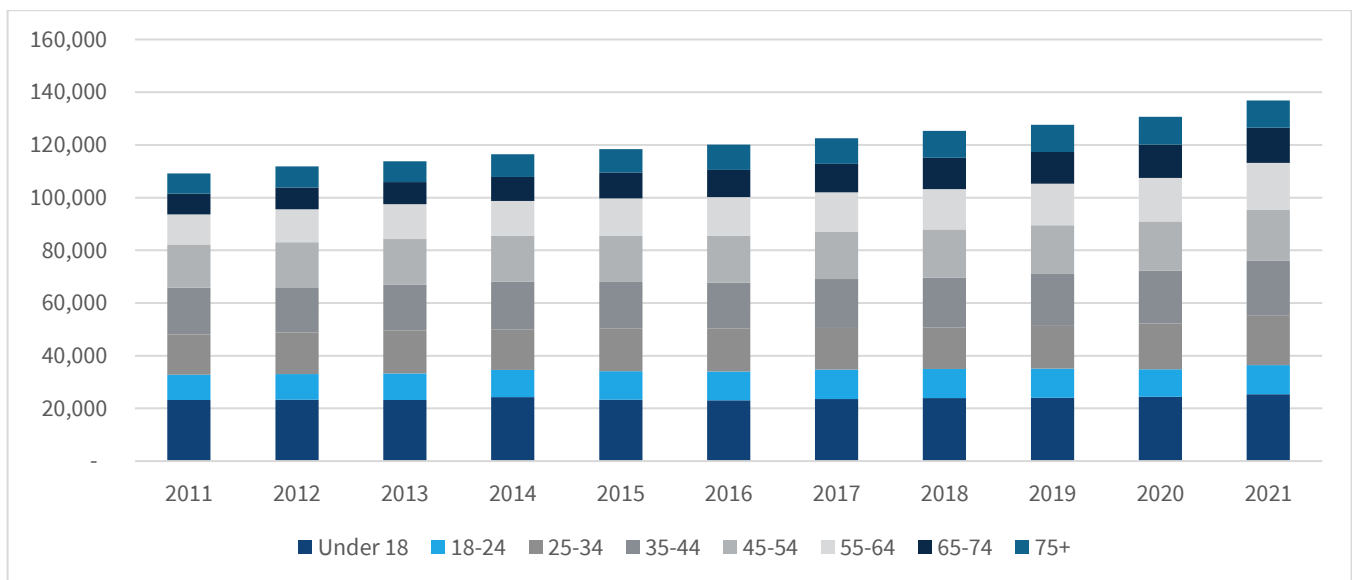


Figure 21 - Population by Median Age

INCOME AND EMPLOYMENT

Comparing this to the population growth of 23.8% from 2011 to 2021, we see that the higher income brackets grew much more rapidly than the population. This suggests significant economic development in the city, possibly due to an influx of higher-paying jobs or an overall increase in wealth. The substantial rise in the highest income bracket indicates a growing affluent segment in Roseville.

With some decreases, the stability in the lower to mid-income brackets could suggest that while the city grows in affluence, it might become less accessible to lower-income households or that the cost of living has risen. These trends could affect housing policy, social services, and community development efforts to ensure balanced and inclusive growth for all residents.

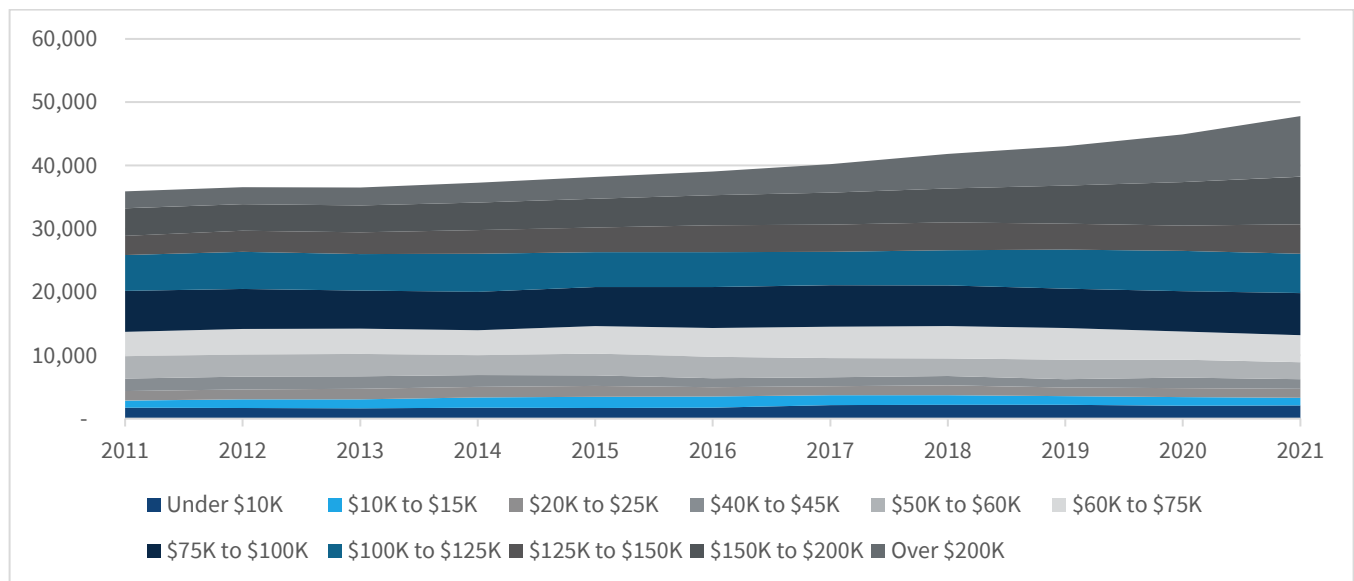


Figure 22 - Median Income by Households

Over this decade, the median household income exhibited a general trend of increase, growing from \$75,245 in 2011 to \$102,660 in 2021, an overall growth of 36.4%. After a slight initial decrease from 2011 to 2013, where the median income dipped to \$74,114, there was a consistent annual increase each subsequent year. The most substantial year-over-year increases occurred from 2019 to 2021, with the income jumping from \$89,082 to \$102,660, marking a 15.3% rise in just two years.

This recent surge might indicate a solid economic upturn or reflect broader economic trends such as inflation or a shift towards higher-paying industries. The data from the later years, particularly the jump in median income, aligns with the household income bracket data previously discussed, where the higher income brackets saw significant increases, suggesting a growing affluent demographic in the region.

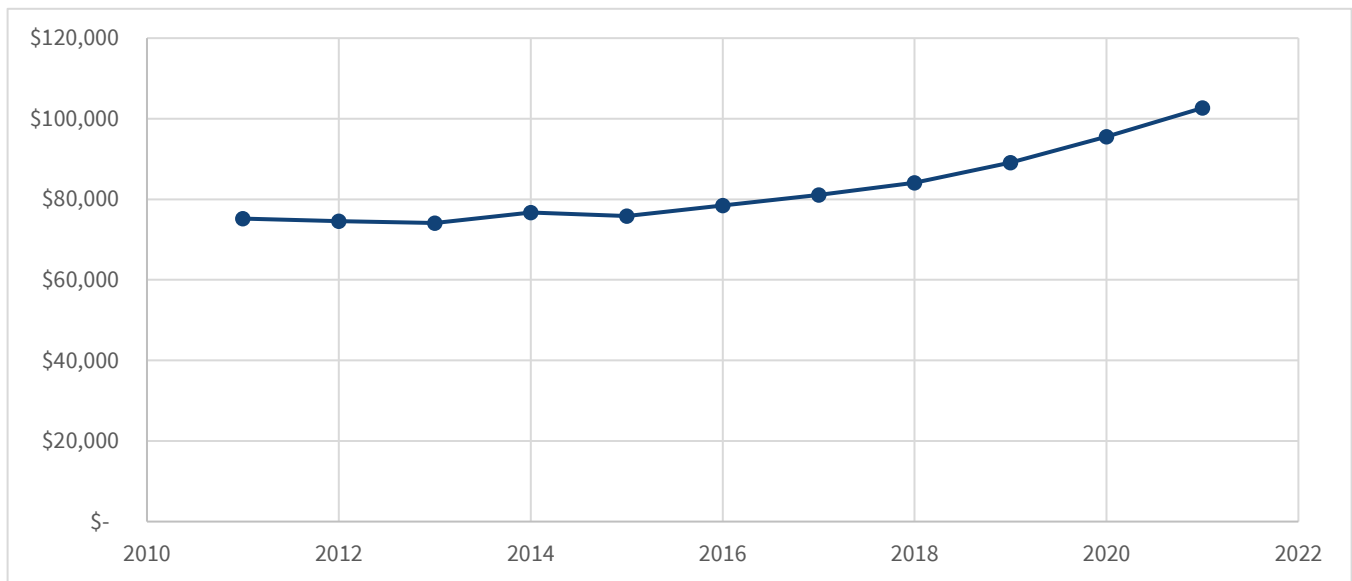


Figure 23 - Median Household Income

The median household incomes across cities surrounding Roseville present a varied economic landscape. Roseville and Rocklin have the highest median incomes at \$102,660 and \$106,164, respectively. This data reflects the broader trend seen in Roseville, where there has been significant economic growth and an increase in wealth, as evidenced by the 36.4% rise in median household income from 2011 to 2021 and the substantial expansion in higher income brackets.

Citrus Heights and Carmichael have considerably lower median household incomes at \$68,457 and \$74,184, respectively. These figures are significantly below Roseville and Rocklin, indicating that these areas may have different economic drivers or a mix of industries employing their residents. The contrast suggests that Citrus Heights and Carmichael might be more affordable regarding living costs or could indicate a different socioeconomic composition.

Lincoln's household income is \$93,232, closer to Roseville but still notably lower. It is still higher than the median incomes of Citrus Heights and Carmichael, suggesting that Lincoln's economic situation is better than these cities but not as affluent as Roseville or Rocklin.

Roseville's consistent population growth and significant increases in higher income brackets suggest a thriving local economy offering more lucrative job opportunities than its neighboring cities. Rocklin's median income, slightly higher than Roseville, points to similar or even more favorable economic conditions.

This data underscores the economic diversity within a relatively small geographic area and highlights the importance of targeted economic development policies that cater to each city's needs.

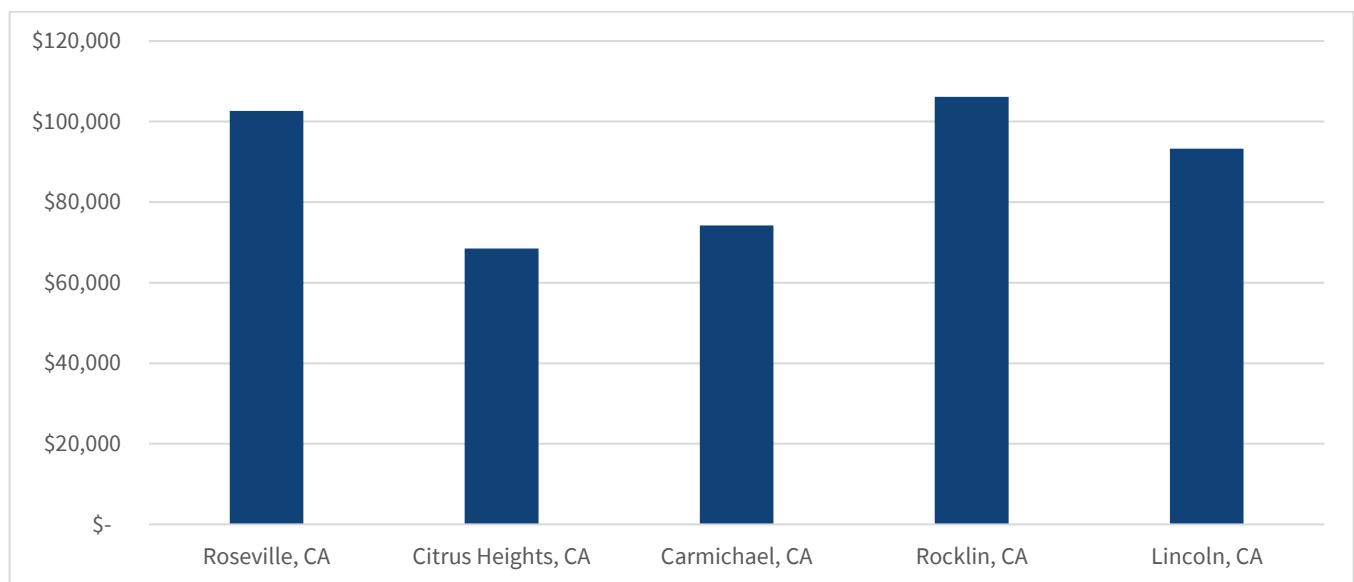


Figure 24 - Median Household Income for Surrounding Cities

EMPLOYMENT

The overall percentage change in the number of employed people in Roseville from January 2019 to September 2023 is approximately -5.10%. This indicates a decrease in employment over the given period, which aligns with the understanding that employment was affected due to the pandemic.

The compound annual growth rate (CAGR) for employment over this period is approximately 1.32%. Despite the overall decrease, this positive CAGR suggests that while there was a significant drop during the pandemic, there has been recovery or growth in the years following the initial pandemic impact.

For comparison, the population growth in Roseville over a similar period from 2011 to 2021 was 23.8%. The employment rate is much lower than the population growth rate, indicating that employment has not kept pace with the increase in population. This disparity can be influenced by various factors, including the economic impact of the pandemic, which caused a sharp decline in employment figures in 2020, as seen in the employment data, with the lowest point in May 2020.

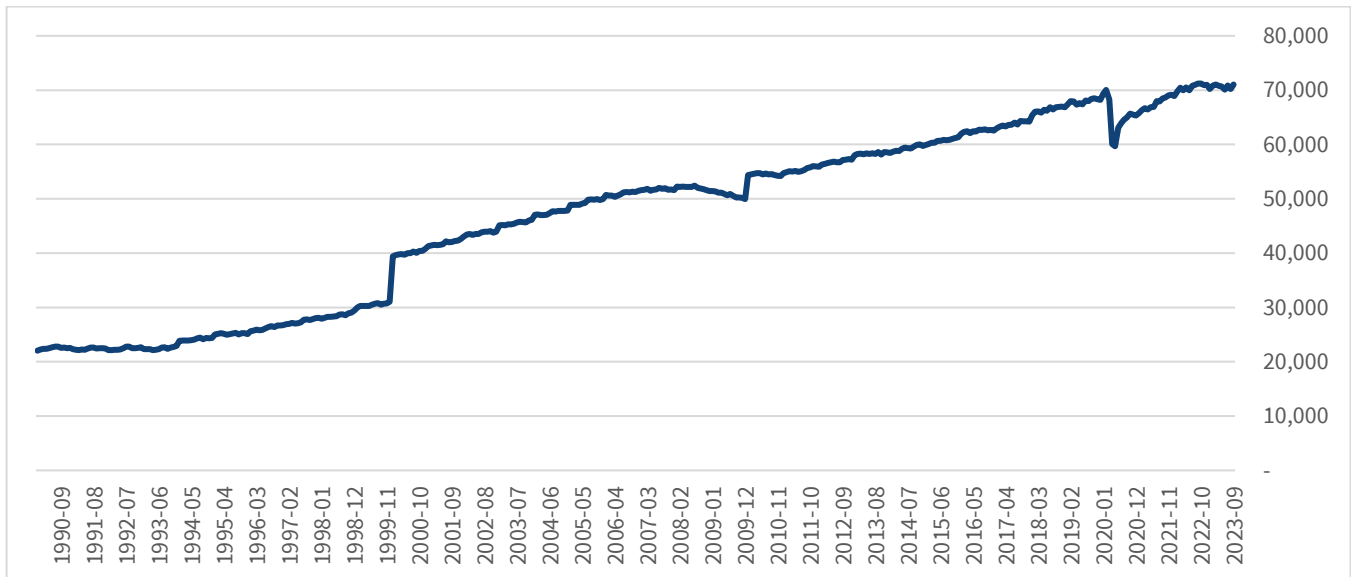


Figure 25 – Population in the Labor Force

UNEMPLOYMENT

The overall percentage change in the unemployment rate in Roseville from January 2019 to September 2023 is approximately 2.78%. This indicates a slight increase in the unemployment rate over the given period. The compound annual growth rate (CAGR) for the unemployment rate over this period is approximately 0.69%. This suggests that, on average, the unemployment rate has increased each year since 2019, albeit relatively slowly.

Comparing this to the population growth in Roseville over a similar period from 2011 to 2021, which was 23.8%, we observe that while the population has grown substantially, the unemployment rate has not seen a significant increase. The slight increase in the unemployment rate could be due to various factors, including the economic impact of the pandemic. However, the rise in the unemployment rate is relatively small compared to the population growth, suggesting that the job market in Roseville has been relatively resilient over the past few years despite the challenges.

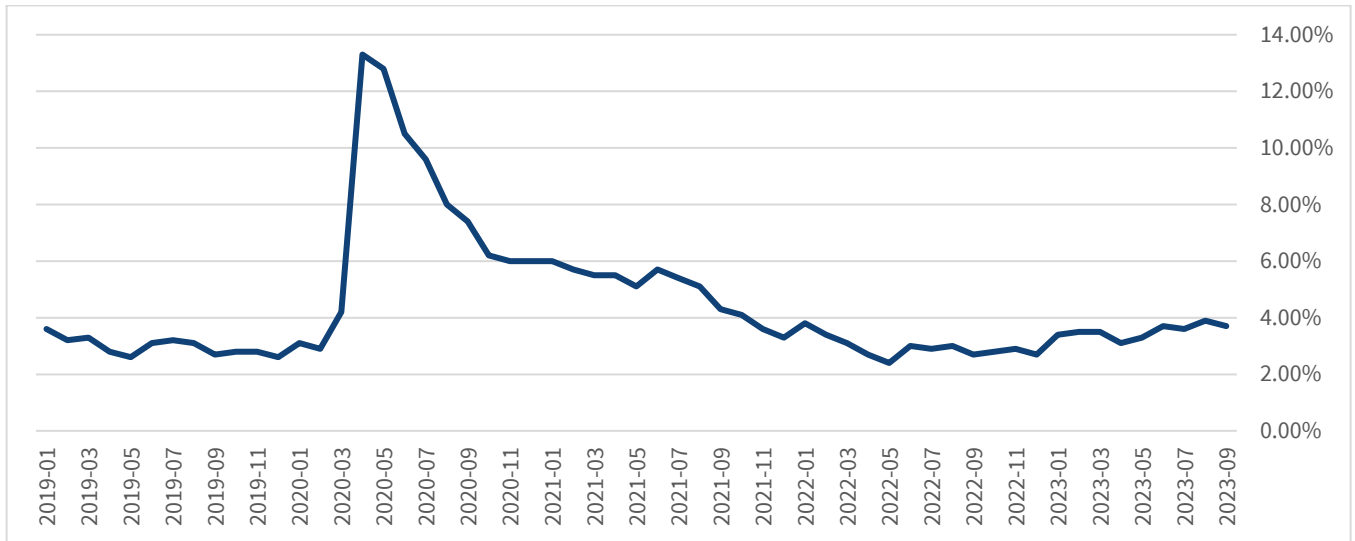


Figure 26 = Unemployment Rate

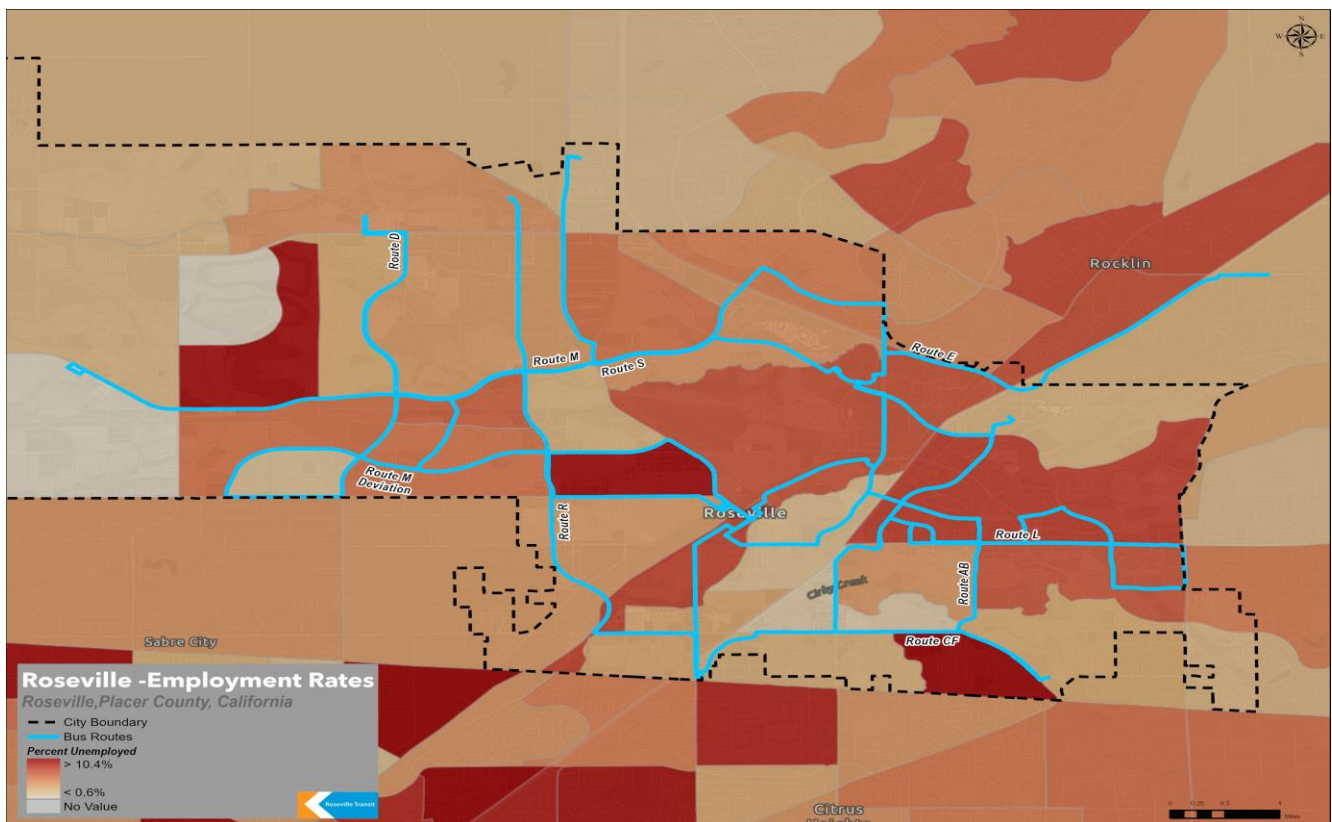


Figure 27 - Service Area Employment

WORK FROM HOME DATA

Placer and surrounding counties have some of the highest work-from-home percentages in California. The increased work-from-home rate in Placer County, and by extension Roseville, can be attributed to several factors, which may include:

- **Industry Composition:** Areas with a higher concentration of industries that can support remote work, such as tech, finance, and professional services, are likely to have higher rates of employment from home. Roseville and Placer County have a substantial presence in such industries, facilitating remote working.
- **Income Levels:** Higher-income areas tend to have more jobs compatible with remote work. Roseville is known to have a higher median income compared to other regions, which correlates with the capacity for remote employment.
- **Connectivity and Infrastructure:** Good internet connectivity and a supportive infrastructure for remote work can contribute to higher work-from-home percentages. Placer County has invested in such infrastructure, making it easier for residents to work from home effectively.
- **Office Vacancy Rates:** A high vacancy rate in Sacramento could indicate a shift towards remote work. An increased office vacancy rate typically means that companies are downsizing their physical office spaces, potentially because they are adopting more flexible work policies or transitioning to fully remote work setups.
- **State and Local Policies** California, particularly in the Sacramento area, has policies that encourage flexible work arrangements. For example, the state government implemented measures to support remote work during the pandemic and may maintain policies that promote or facilitate such arrangements.
- **Hybrid Working Policies:** Many organizations, including state departments in California, have adopted hybrid working policies that allow employees to work from home part of the time. The state government, one of the Sacramento area's largest employers, can significantly influence regional work practices.

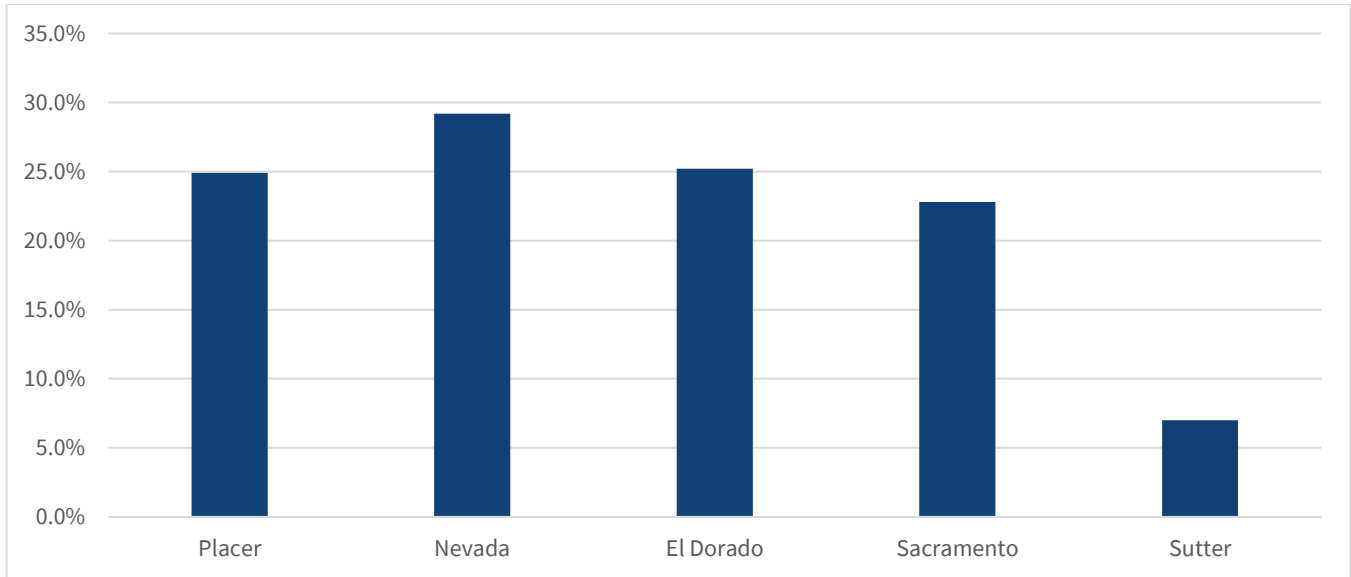


Figure 28 - Work from Home Percentages by County

The high work-from-home percentage in Roseville and surrounding counties suggests that businesses and employees have embraced the flexibility that remote work provides. This trend may affect commercial real estate, urban planning, traffic patterns, and local businesses traditionally relying on office workers as customers. The sustained high percentage of work from home could also affect public transportation usage and city revenues related to business districts. It also reflects the broader, potentially long-term changes in the workplace precipitated by the pandemic.

SPECIAL SACRAMENTO MARKET ANALYSIS

The office market in Sacramento has faced challenges in the second quarter of 2023, with the vacancy rate reaching its highest since the end of 2012. Negative net absorption has persisted, indicating that more office space is becoming vacant than is being leased. Large companies have contributed to this trend by vacating significant spaces, and with the State of California's anticipated move out of leased spaces, vacancies are expected to rise further. While asking rents have remained stable, with some increases in suburban areas and slight decreases downtown, sales activity has been limited due to high-interest rates and a slow return to office work. This situation suggests that the higher work-from-home percentage in Roseville could respond to the availability of office space and the shift in working patterns post-pandemic.

POVERTY

Analyzing the combined poverty rate for both females and males in the City of Roseville over the past decade, from 2011 to 2021, shows a general trend of increase followed by a recent decrease. In 2011, the average poverty rate started at 7.45%. By 2018, it had increased to 8.95%, marking the peak within the decade. From there, the rate decreased, reaching an average of 6.95% by 2021. This represents a percentage increase of approximately 20% from 2011 to 2018, followed by a decrease of roughly 22.3% from 2018 to 2021. From 2011 to 2021, the average poverty rate has decreased by approximately 3.4%.

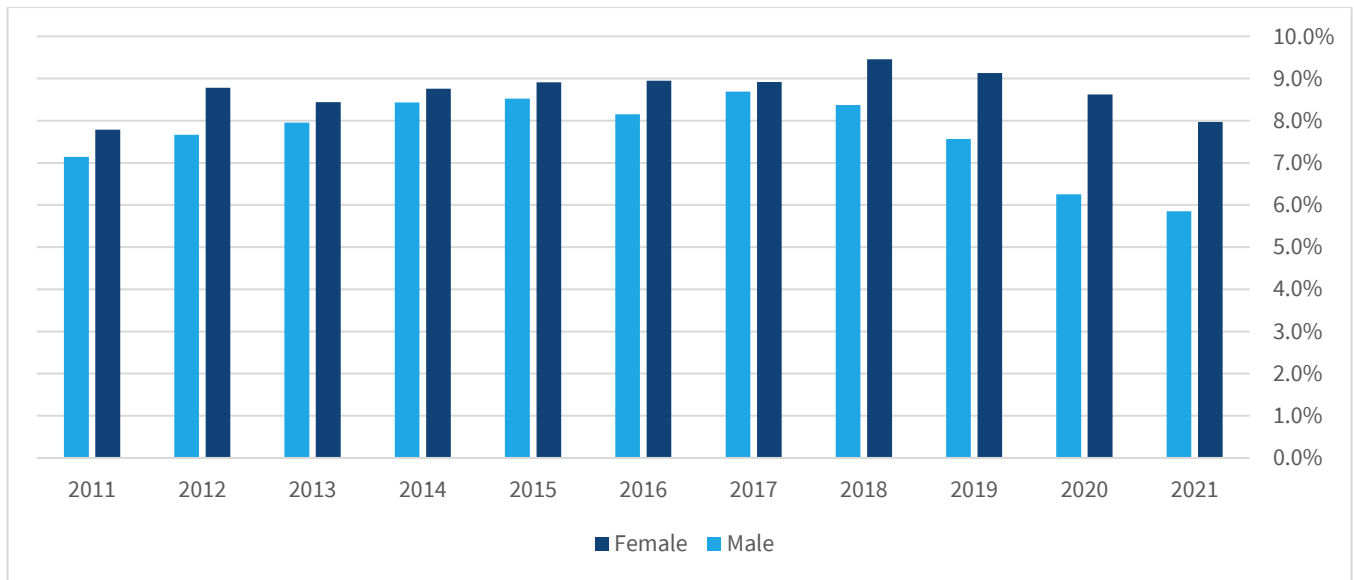


Figure 29 - Poverty Rate by Gender

The median household income analysis indicated a general increase in income for Roseville over the past decade. In contrast, considering the data provided and the map, the poverty rate analysis shows fluctuations with a slight decrease in poverty rates by the end of the decade.

Higher median incomes typically correlate with lower poverty rates, but the map reveals that poverty in Roseville is not evenly distributed, with certain outskirts exhibiting higher poverty rates. This suggests that while median household income may have increased overall, the benefits have not been evenly felt across the city, with some areas experiencing more persistent poverty.

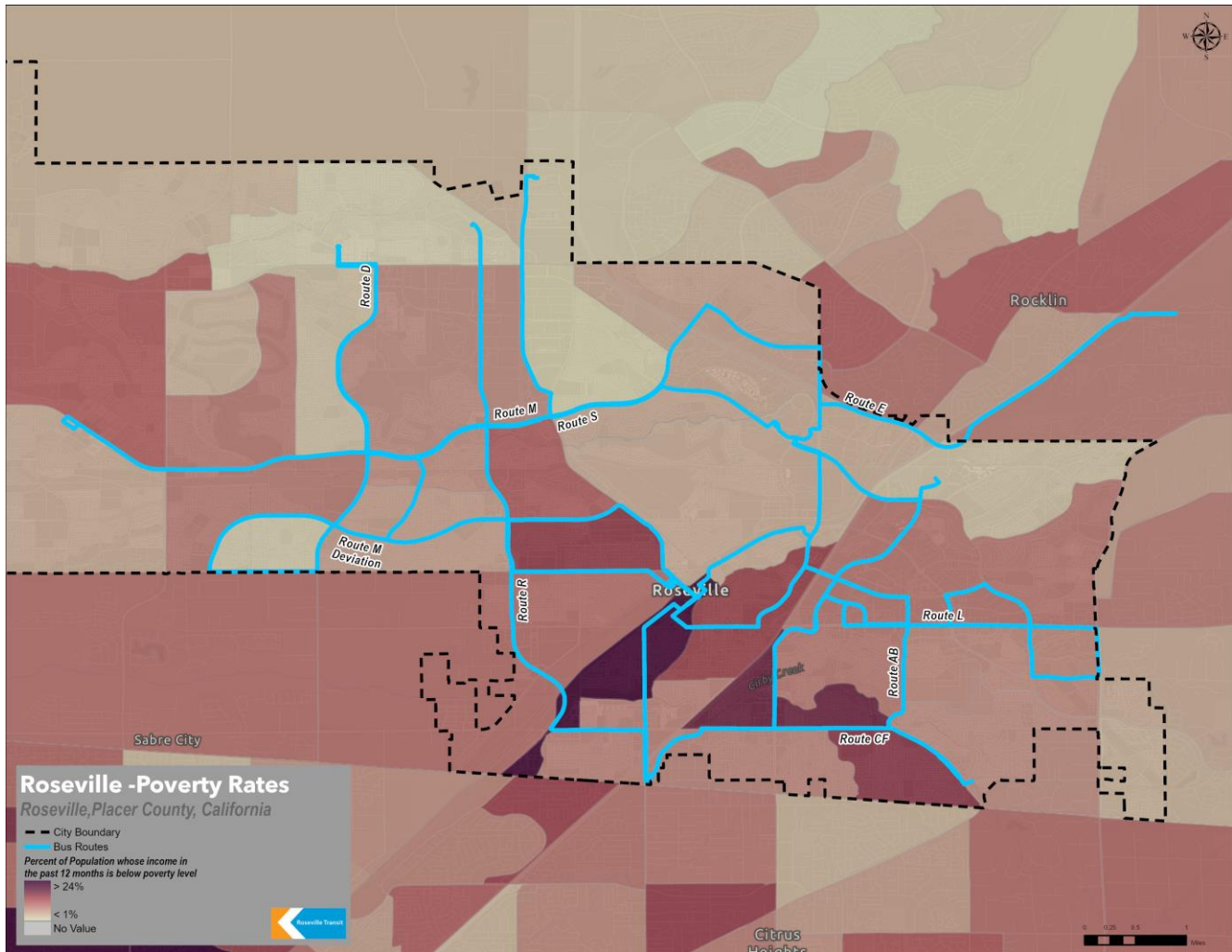


Figure 30 - Service Area Poverty

The comparison of poverty rates across cities near Roseville, alongside median household income and population changes, offers a nuanced view of regional economic health. With moderate poverty rates and a rising median household income over the past decade, Roseville suggests steady economic growth. However, neighboring cities like Citrus Heights and Carmichael, with higher poverty rates, may face more significant economic challenges despite proximity. In contrast, Rocklin showcases lower poverty rates and a higher median household income, reflecting a more affluent demographic. Meanwhile, Lincoln's poverty rates and median income position it economically between Roseville and the wealthier Rocklin. These disparities highlight the complex interplay between income levels, population growth, and regional economic well-being.

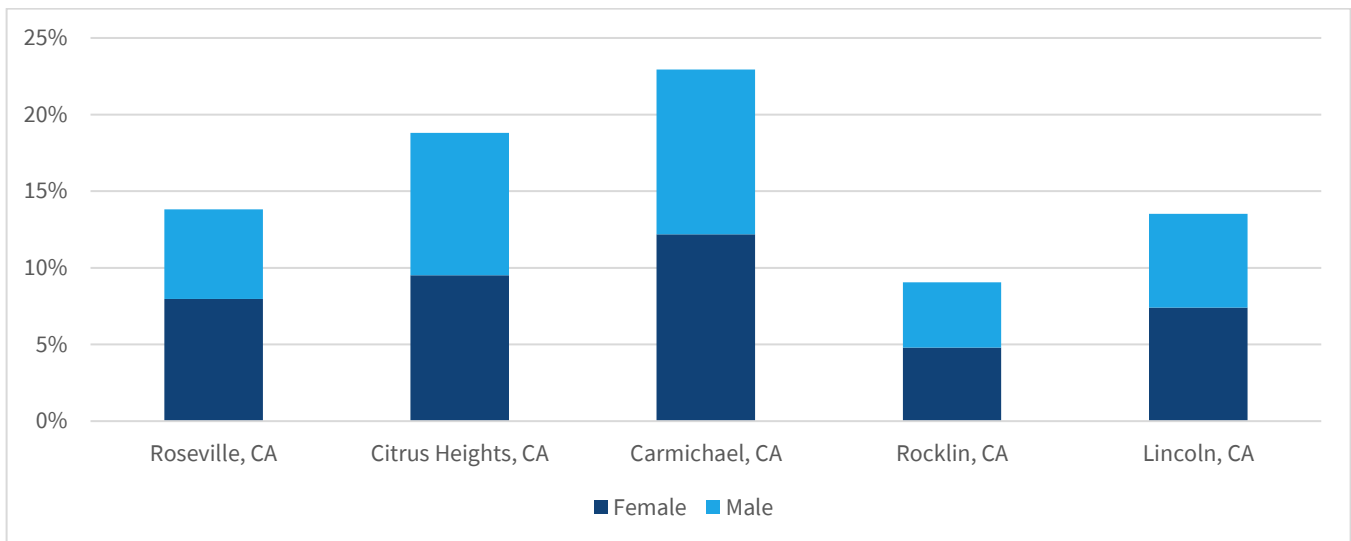


Figure 31 - Poverty Rates of Nearby Cities

The poverty rates by race in Roseville over the last decade reflect varied economic experiences among different ethnic groups. Notably, the American Indian or Alaska Native population faced an increasing poverty rate, peaking in 2018 at 42% before declining to 19% by 2021. The Asian community maintained relatively low poverty rates, with a slight increase in 2019. Black or African American poverty rates showed fluctuations, with a significant peak in 2014 at 28%. Hispanic or Latino rates peaked in 2018 at 20%, while White residents remained consistently at or below 8%. These figures must be viewed in the context of Roseville's overall economic growth, marked by rising median household incomes and population increases. However, the data indicates that this prosperity has not been evenly distributed among all racial groups.

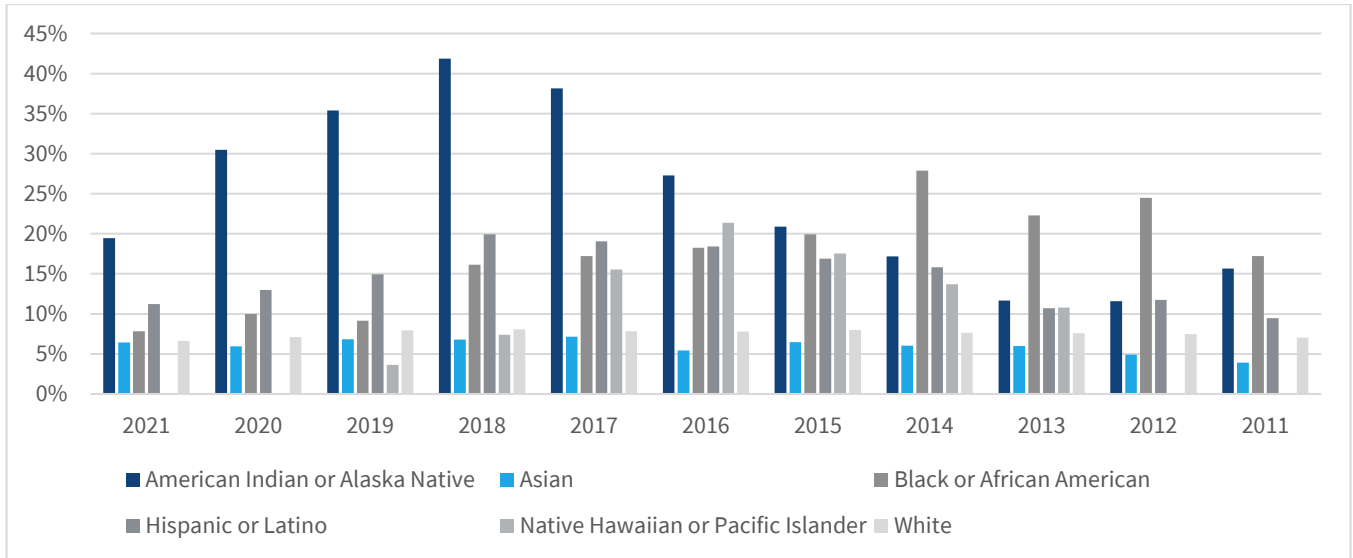


Figure 32 – Poverty Rate by Race

RACE AND ETHNICITY

Using 2020 self-reported census data, Roseville was mapped by density, race, and ethnicity. The map below shows a somewhat integrated region with some pockets of racial concentration.

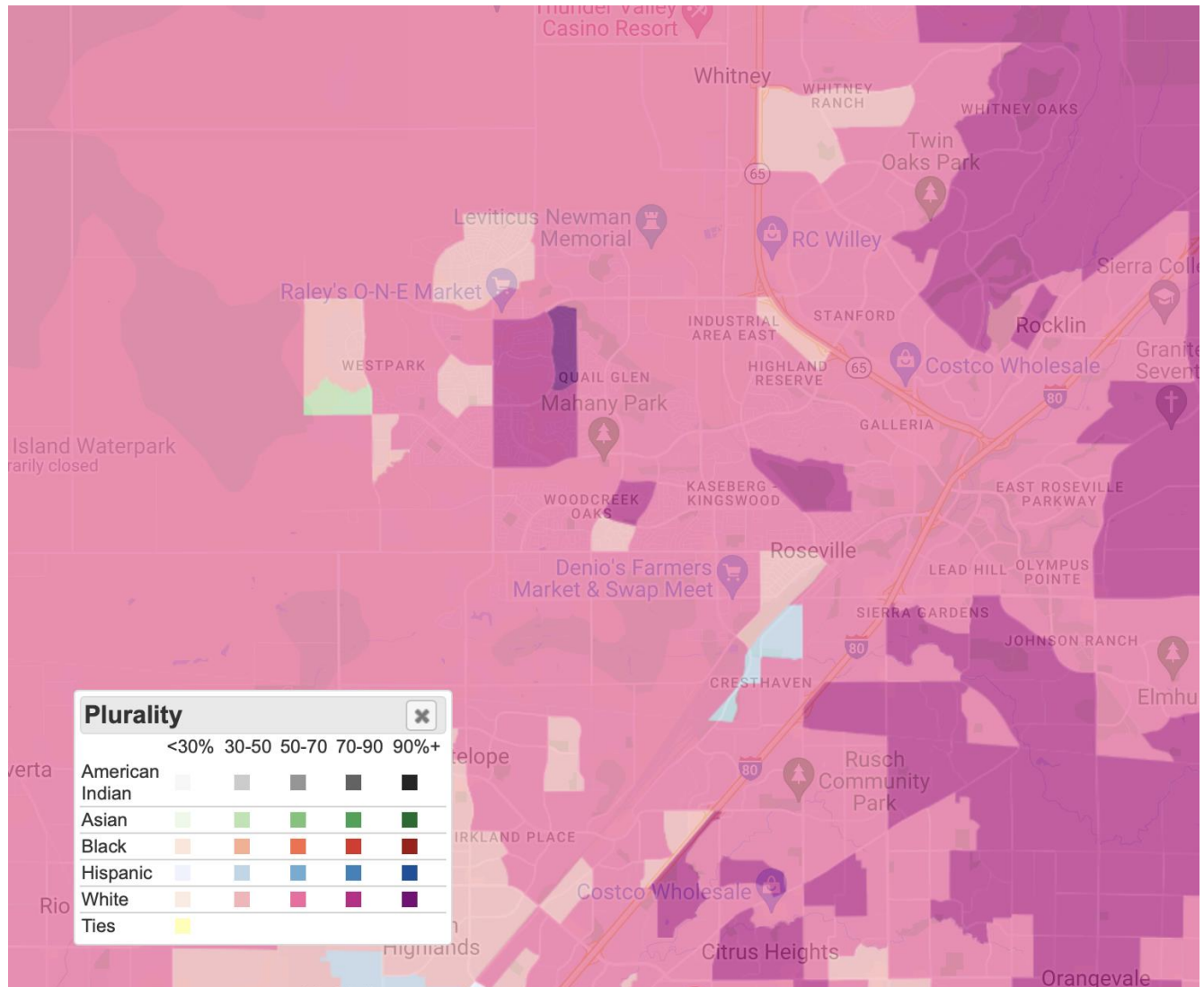


Figure 33 – Service Area Race and Ethnicity by Census Block Group

When looking at owning versus renting, it appears that the more racially diverse areas of the city also have more renters than homeowners.

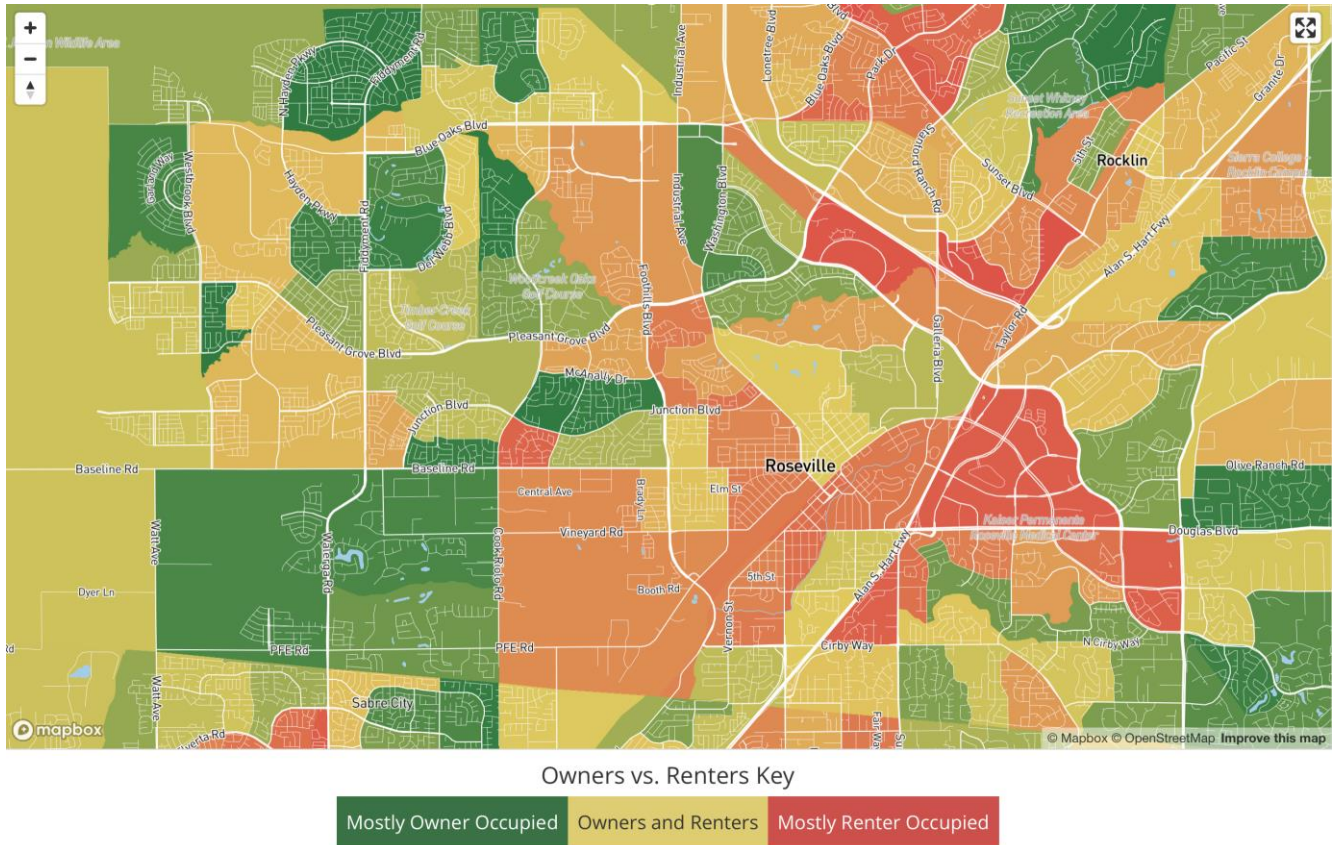


Figure 34 - Homeownership Within City Limits

In Roseville over the past decade, the White Alone population has been the largest racial group, with slight year-on-year fluctuations. From 2020 to 2021, this group saw a modest increase of approximately 1.9%. Over the ten years, the most significant annual growth was from 2018 to 2019, at about 1.7%.

The Hispanic or Latino population, another large group, exhibited steady growth, culminating in a 6.6% increase from 2020 to 2021. Their most considerable growth within a year occurred between 2012 and 2013, at around 3.85%.

The Asian Alone category has consistently grown yearly, marking the group with the most significant and steady increase. This group rose by 5.6% in the most recent year, and the most substantial annual growth was nearly 12% from 2020 to 2021.

For those identifying with Two or More Races, there has been a significant upward trend, with an increase of 28.9% from 2020 to 2021, marking the most notable growth rate among all groups for that year. Over the decade, this category saw its highest annual surge of approximately 39.7% in the same period.

The Black or African American population experienced some variability, with a notable increase of 13.6% from 2020 to 2021. The most considerable year-over-year rise was around 18.7% from 2019 to 2020.

The category of Some Other Race saw a substantial increase of 31.4% from 2020 to 2021, despite a significant decrease the previous year. This indicates a possible trend toward more individuals identifying with races not specified in the main categories.

For Native Hawaiians or Pacific Islanders, the figures fluctuated, with a notable decrease of 25.2% from 2020 to 2021. However, an exceptional increase of 86.5% was from 2017 to 2018.

Lastly, the American Indian or Alaska Native population decreased about 28.5% from 2020 to 2021, although there had been a significant increase of roughly 41.1% from 2016 to 2017. This group showed the most fluctuation compared to the others over the decade.

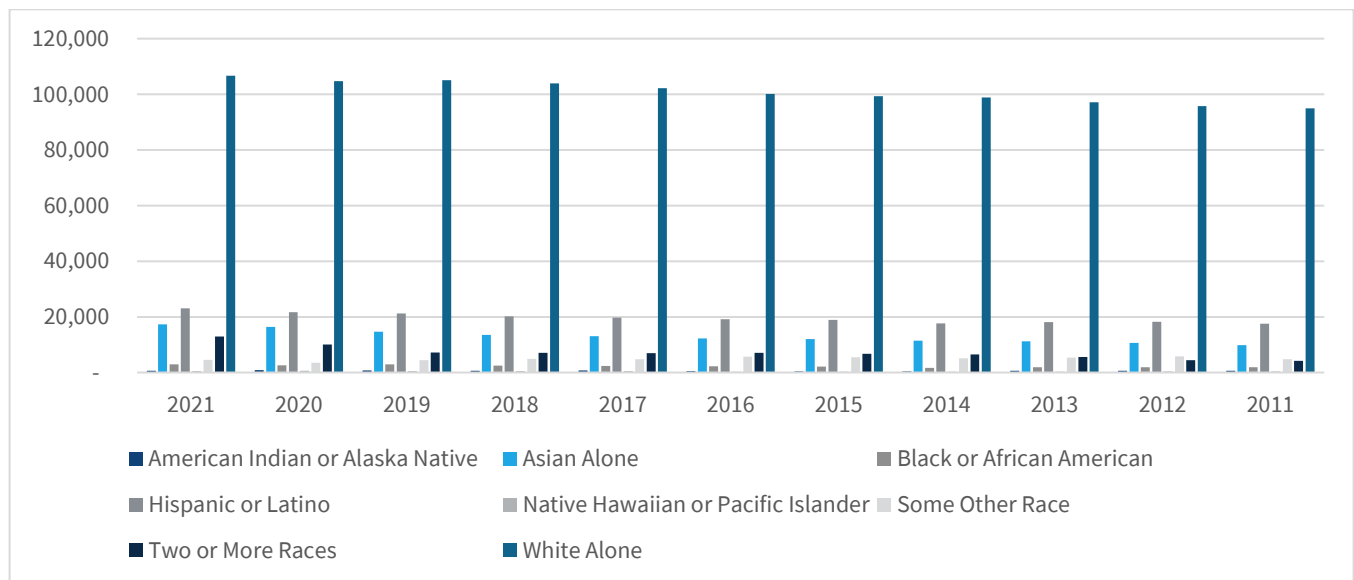


Figure 35 - Service Area Population by Ethnicity

Upon examining the median age data for the City of Roseville, it is evident that the demographic landscape is shifting in complex ways, with variations in aging across different racial and ethnic groups.

The White Alone group, which is the most populous, has seen a slight increase in median age from 37.8 years in 2011 to 41.2 years in 2021. This increment suggests that the White Alone population is aging, albeit gradually.

For the Hispanic or Latino population, which has shown consistent growth in numbers over the decade, the median age has increased from 26.3 years in 2011 to 30.9 years in 2021. Although this is a notable rise, it still represents the youngest median age among the significant racial and ethnic groups, indicating that this population segment is getting older but remains relatively young.

The Asian Alone population has maintained a relatively stable median age over the decade, starting at 37.1 years in 2011 and reaching 38.7 years in 2021. This stability in age and consistent population growth indicate that this group is not significantly aging.

The Black or African American group has experienced an increase in median age from 38.6 years in 2011 to 42.6 years in 2021, showing signs of aging within this demographic.

Among the Native Hawaiian or Pacific Islander residents, there have been fluctuations in median age, but the trend from 35.3 years in 2011 to 39.9 years in 2021 also points to an aging population.

The Some Other Race category has seen a significant rise in median age, from 28.6 years in 2011 to 35.4 years in 2021, indicating that this group is also aging.

The Two or More Races demographic stands out with its lower median age, which has increased from 15.8 years in 2011 to 24.1 years in 2021. Despite this increase, it remains the youngest group, which could be reflective of younger, multiracial families and individuals within the city.

Lastly, the American Indian or Alaska Native population has seen fluctuating median ages throughout the decade, with a general trend from 32.6 years in 2011 to 37.8 years in 2021. This fluctuation makes it difficult to pinpoint a clear aging trend, although the data from the selected years suggests a gradual increase in age.

The data indicates that the population of Roseville is generally aging across most racial and ethnic groups, with the Hispanic or Latino population remaining the youngest on average. The White Alone group is aging at a steady pace, while the Asian Alone population remains relatively stable in age. The Black or African American, Native Hawaiian or Pacific Islander, and Some Other Race categories show clear signs of an aging demographic. While increasing in median age, the Two or More Races category still represents the youngest demographic, hinting at a burgeoning young multiracial population. These shifts suggest that the city is experiencing a broad demographic aging, with the nuances of each group contributing to the overall complexity of the city's population dynamics.

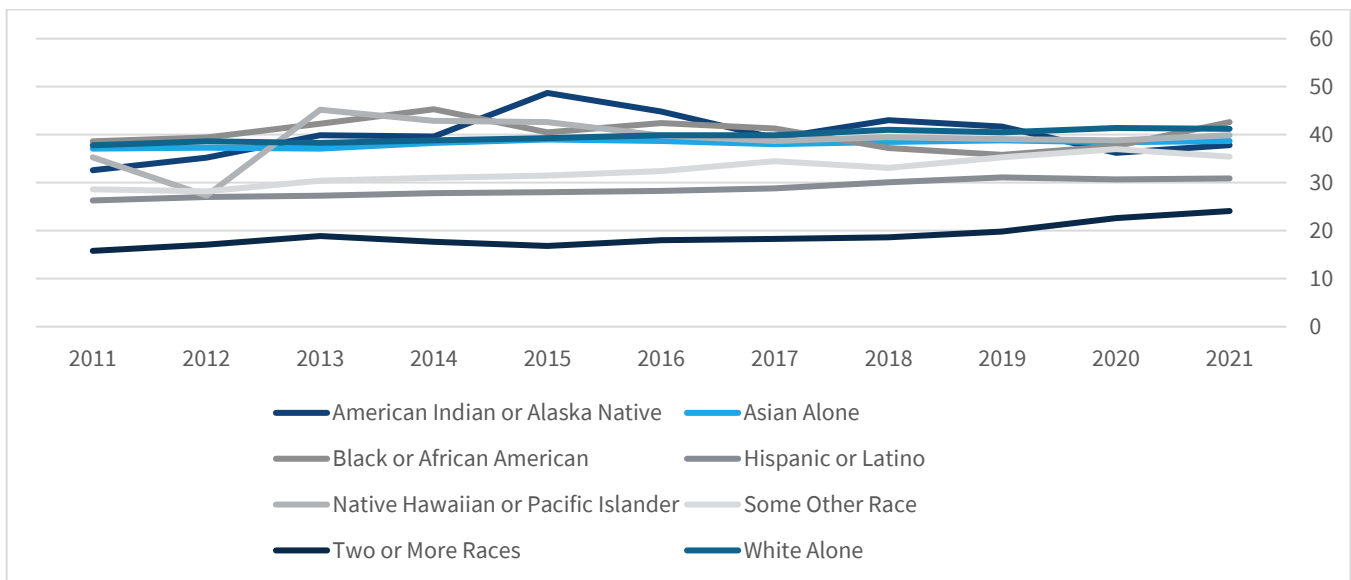


Figure 36 - Median Age by Ethnicity

When comparing the median age of the most populous group, White Alone, across different cities, Roseville, CA, with a median age of 41.2 years, sits in the mid-range. It is younger than Carmichael and Lincoln, where the median ages are 44.5 and 47.1 years, respectively, indicating a relatively older White population in these areas. However, it is slightly older than Citrus Heights and Rocklin, which have median ages of 39.9 and 39.3 years, respectively.

For the Asian Alone population, Roseville's median age is moderately lower compared to neighboring Citrus Heights, Carmichael, and Lincoln. This could suggest that Roseville is a younger community or attracting younger Asian families and individuals. Rocklin's Asian Alone group is marginally younger than Roseville, with a median age of 37.5 years.

Looking at the Black or African American group, Roseville's median age is considerably higher than in Citrus Heights and Carmichael, perhaps reflecting a more established or aging population. In contrast, Lincoln has a significantly higher median age for this group, suggesting an even older demographic.

For Hispanic or Latino residents, Roseville's median age is slightly above that of Citrus Heights, Carmichael, and Rocklin, with Lincoln being the closest to Roseville. This indicates a younger Hispanic or Latino population in these cities overall, with Roseville's being somewhat older but still younger than the total population.

The Native Hawaiian or Pacific Islander category in Roseville has a median age higher than in Citrus Heights, Carmichael, and Rocklin. In contrast, Lincoln's median age for this group is substantially higher, indicating an older demographic.

Roseville's population identifying with Some Other Race has a higher median age than its counterparts in the surrounding cities, which could point to an older or more settled demographic within this group in Roseville.

Roseville's Two or More Races demographic is the youngest among the compared cities, indicating a younger, growing, and possibly more diverse population. It is older than Rocklin but younger than Citrus Heights and Carmichael.

Roseville generally presents a balanced demographic, with its White Alone and Asian Alone populations being younger or on par with neighboring cities. In comparison, its Black or African American and Native Hawaiian or Pacific Islander populations are older than in most other compared cities. The Hispanic or Latino and Some Other Race groups are moderately older in Roseville, and the Two or More Races category remains notably the youngest, suggesting an emerging young, multiracial cohort within the city. This demographic picture indicates that while some populations within Roseville are aging, others are maintaining youthfulness, contributing to a diverse age structure within the city.

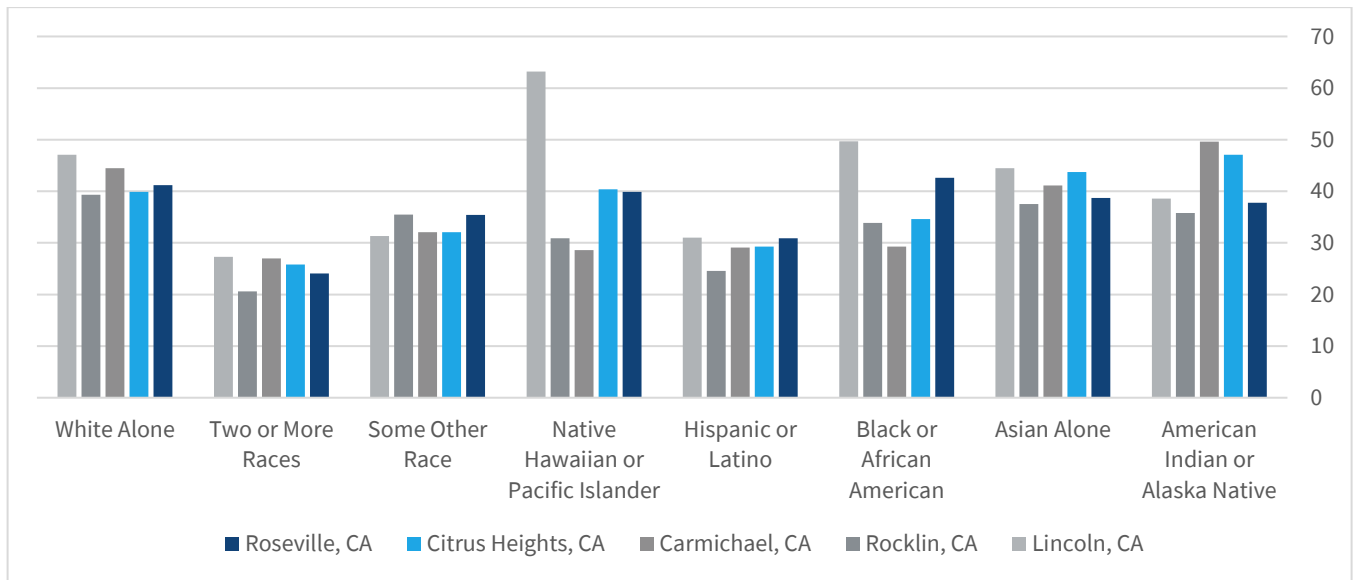
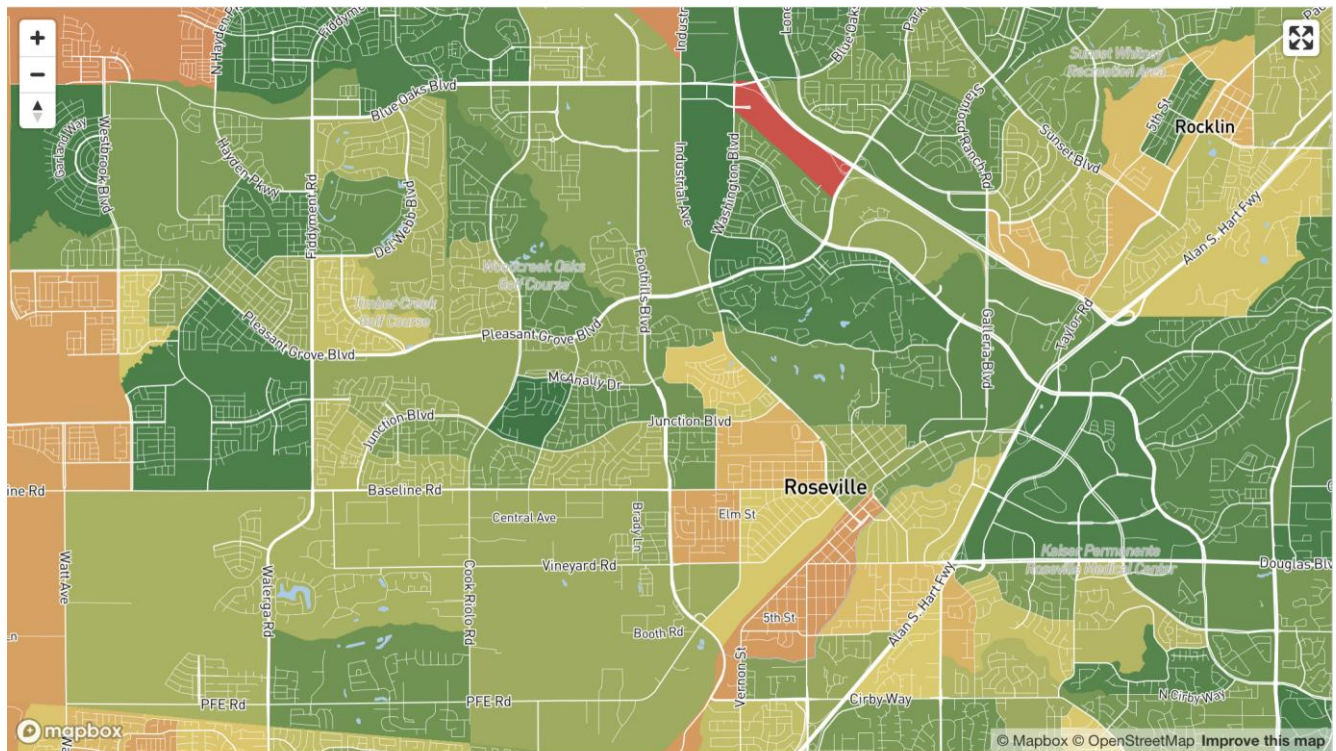


Figure 37 – Median Age by City

EDUCATION

When looking at the highest level of degree achieved, there is a direct correlation between the poverty map and the level of education. In areas of dense poverty, we see dense populations without a GED.



Educational Attainment Key



Figure 38 - Service Area Education

As indicated by the orange color on the map, the less educated areas are primarily located on the periphery of Roseville. These areas are:

- In the southern part of Roseville, below Baseline Rd.
- Stretching to the west side, adjacent to the western boundary of Roseville, bordering the green and yellow zones.
- There is also a small strip of less educated area on the northeastern edge of the map, between the green (highly educated) and yellow (somewhat educated) areas.

These areas are generally on the outskirts of the central and more densely coded green areas, which are marked as highly educated

In Roseville, a notable correlation exists between educational attainment, poverty, and unemployment, as visualized across three thematic maps. The southern and western peripheries of the city are characterized by lower educational attainment, higher rates of poverty, and elevated unemployment levels. While the northeastern edge of Roseville was identified as less educated, it does not correspondingly show high poverty or unemployment, suggesting that additional factors may influence these metrics. Central regions of Roseville display pockets of higher poverty and unemployment, yet these do not cover as extensive an area as the outer regions. These overlapping socioeconomic challenges highlight areas that may benefit from targeted interventions to improve education, reduce poverty, and increase employment opportunities. This visual analysis underscores the multi-faceted nature of socioeconomic issues and the need for a holistic approach to urban development and policy-making.

SUMMARY

The Market Assessment report offers a comprehensive analysis of Roseville's dynamic socio-economic landscape, revealing substantial growth and changing demographics. From 2011 to 2021, the city experienced a significant population increase of 23.8%, with notable growth in older age brackets, indicating an aging trend alongside overall population expansion. This growth mirrors the city's diverse ethnic makeup, with sizable Hispanic, White, and Asian populations. Economically, Roseville stands out with a high median household income of \$140,156, signaling an affluent community. Despite a -5.10% change in overall employment numbers between 2019 and 2023, the city exhibited a positive compound annual growth rate in employment, showcasing resilience, particularly in the post-pandemic context. However, this period also saw a slight rise in the unemployment rate.

In housing, Roseville displays a strong preference for single-unit dwellings, with many owner-occupied houses, indicating stability and a thriving real estate market. Urban development is active, encompassing commercial, residential, and industrial sectors, underscoring the city's commitment to growth and modernization. Despite these positive indicators, the report highlights challenges, such as an increasing poverty rate until 2018, which only recently began to decrease to 6.95% by 2021. This suggests that while median income has risen, economic benefits are unevenly distributed, leaving some areas struggling with persistent poverty.

The trend of work-from-home arrangements is notably high in both Placer County and Roseville, influenced by factors like industry composition, income levels, and supportive infrastructure. Educational attainment is closely linked to poverty, with less educated areas experiencing higher poverty rates. This educational disparity is evident across various areas of Roseville, pointing to potential opportunities for targeted educational interventions.

Lastly, the report delves into the ethnic and racial dynamics of the city. Different ethnic groups show varying economic experiences and poverty levels. Despite an overall aging trend, the Hispanic or Latino population remains comparatively younger. The insights from this report are pivotal in guiding policy and development strategies, ensuring that Roseville's growth is not only robust but also balanced and sustainable, addressing the challenges of uneven income distribution and the need for focused educational and economic interventions.

Ridership and Route Profiles

INTRODUCTION

The "Ridership and Route Profiles" section is a cornerstone of "Transportation 360". It is a comprehensive review designed to assess, analyze, and enhance transit and mobility services in the City of Roseville and its surrounding areas. This section thoroughly analyzes Roseville Transit's services, focusing on local fixed-route services, demand response programs, and commuter services. The findings from each mode of transportation reveal critical insights into their current operations, challenges, and opportunities for enhancement. The necessity of this section within the broader "Transportation 360" framework stems from several key objectives:

- 1. Data-Driven Decision-Making:** By dissecting ridership data and route performance, this section lays the groundwork for informed, evidence-based decision-making. It enables transit planners, city officials, and stakeholders to identify areas of strength, pinpoint challenges, and allocate resources more effectively to meet the community's mobility needs.
- 2. Service Optimization:** Detailed route profiles offer insights into usage patterns, peak travel times, and passenger demographics, which are crucial for optimizing current services. This information guides the development of targeted strategies to enhance service reliability, efficiency, and passenger satisfaction.
- 3. Strategic Planning:** Understanding the intricacies of each route and mode facilitates long-term strategic planning. It helps forecast future trends, plan for expansion, and integrate innovative mobility solutions to keep pace with the evolving demands of Roseville's residents and commuters.
- 4. Community Engagement and Transparency:** Providing a comprehensive overview of ridership and route specifics fosters greater transparency and encourages community engagement. It allows the public to gain a deeper understanding of transit operations, contributing to a more inclusive dialogue on mobility improvements and service adaptations.
- 5. Benchmarking and Continuous Improvement:** This section serves as a benchmarking tool, allowing Roseville Transit to measure its performance over time, compare it with similar transit systems, and identify best practices for continuous improvement.
- 6. Adaptability to Changing Dynamics:** In an era marked by rapid changes in work habits, urban development, and technology, the detailed analysis provided in this section ensures that Roseville Transit remains adaptable and responsive to emerging mobility trends and challenges.

- 7. Policy and Funding Support:** By articulating the specific needs and performance of different transit modes and routes, this section strengthens the case for policy support and funding allocation at local, state, and federal levels. It highlights the critical role of public transit in urban sustainability, economic development, and social equity.

In sum, the "Ridership and Route Profiles" section is not just a collection of data; it is a strategic tool that underpins the "Transportation 360" initiative. It ensures that the review is grounded in reality, providing a solid foundation for shaping a more connected, efficient, and user-centered mobility ecosystem in Roseville and beyond.

SUMMARY OF FINDINGS

LOCAL FIXED-ROUTE SERVICES

- **Ridership Trends:** The local fixed-route service experienced a decline in ridership by 12.5% in the fiscal year 2021-22, largely attributable to the COVID-19 pandemic. However, specific routes like A and B demonstrated resilience with consistent year-over-year ridership increases, indicating strong demand in certain corridors.
- **Service Efficiency:** The implementation of microtransit technology and collaborative efforts with the GO South Placer network have begun to yield improvements in service efficiency and passenger convenience, suggesting a positive trajectory for future operations.
- **Route Performance:** Analysis of individual route performances, such as the significant ridership increases on routes C and E in 2023 and the operational challenges faced by Route D, underscores the importance of continuous route evaluation and adaptation to meet changing community needs.

DEMAND RESPONSE PROGRAMS

- **Arrow Microtransit:** The transition from Dial-A-Ride to Arrow microtransit has been met with a positive response, with Arrow experiencing a significant uptick in ridership post-transition, indicating a strong community preference for flexible, on-demand transit solutions.
- **ADA Paratransit:** ADA Paratransit services have shown steady usage, reflecting the critical need for specialized transit solutions for passengers with disabilities. The service's adaptability and responsiveness to user needs remain paramount for its continued success.

- **Funding and Support:** Both Arrow and ADA Paratransit benefit from diverse funding sources, including federal grants and local non-profit support, which have been instrumental in sustaining operations and facilitating service improvements.

COMMUTER SERVICES

- **Ridership Impact:** The pandemic and the rise of remote work policies have significantly impacted commuter service ridership, with a notable decline from over 530 daily riders to approximately 100 daily riders. This trend underscores the need for Roseville Transit to reevaluate and potentially redesign commuter services to align with the new normal of work.
- **Telework Policies:** The implementation of telework policies by major employers, including the State of California and the City of Sacramento, has contributed to reduced commuter demand. This shift necessitates a strategic rethinking of service offerings to cater to evolving commuter patterns.
- **Office Occupancy Trends:** The increase in office vacancy rates and the repurposing of office spaces in Sacramento present additional challenges for commuter services. These trends highlight the need for flexible and innovative transit solutions that can adapt to the changing landscape of urban workspaces.

CONCLUSIONS AND RECOMMENDATIONS

The findings from this review offer a nuanced understanding of Roseville Transit's current operations and the external factors influencing its services. For local fixed-route services, enhancing route efficiency and leveraging technology for real-time data and service adjustments are key priorities. Demand response programs like Arrow and ADA Paratransit should continue to focus on user-centered design and accessibility, ensuring that these vital services meet the community's diverse needs.

For commuter services, the dramatic shifts in ridership and commuting patterns necessitate a thorough reevaluation. Roseville Transit may need to explore alternative service models, such as flexible commuter shuttles, partnerships with rideshare companies, or incentivizing off-peak travel to better serve the city's changing workforce.

LOCAL FIXED ROUTE

Roseville Transit is a public transportation service that operates in Roseville, California. It offers Local fixed-route service, which runs on several routes within the city, Monday to Saturday. The Local service connects to other transit systems in the South Placer region, such as Placer County Transit and Sacramento Regional Transit.

According to the latest national data, Roseville Transit's fixed route ridership was 1,029,000 in 2021-22, which decreased 12.5% from the previous fiscal year. This decline was mainly due to the impact of the COVID-19 pandemic, which reduced the demand for public transportation. However, Roseville Transit has been implementing various measures to improve its service quality and efficiency, such as introducing microtransit technology and collaborating with other GO South Placer network transit agencies.

Roseville Transit’s Local service operates on nine fixed routes within the city of Roseville, identified by letters A, B, C, D, E, F, L, M, R, and S. The routes cover vital areas such as the Galleria Mall, the Civic Center, the Louis Orlando Transit Center, the Sierra Gardens, the Foothills, the Junction, the Mahany Park, and the Sun City Roseville.

The Local service hours vary by route, but generally, they are Monday to Friday from 5:45 AM to 10 PM and Saturday from 8 AM to 5 PM. There is no Sunday service for the Local routes. If riders plan to travel on Sundays, they may use Roseville Transit’s Arrow service, which is an on-demand service that operates seven days a week throughout Roseville.

The Local service connects to other transit systems in the South Placer region, such as Placer County Transit and Sacramento Regional Transit, at the Galleria Transfer Point or the Louis Orlando Transit Center. Riders can use a Local Daily or 30-Day Pass to board these systems or pay their fares.

The Local service fare for each one-way trip is \$1.50 for adults, \$0.75 for seniors, disabled, and youth, and free for children under 5. You can pay with cash, electronic cards, or mobile tickets.

ROUTE RIDERSHIP COMPARISON

The table below shows each route's average monthly ridership from 2021 to 2023. These totals provide a clear picture of the year-over-year ridership trends for each route operated by Roseville Transit.



Table 3 - Average Ridership by Route 2021-2023

Month	A	B	C	D	E	F	L	M	R	S
January	2,131	2,276	83	907	18	58	306	1,039	979	148
February	2,181	2,260	61	938	20	54	288	1,143	1,034	144
March	2,673	2,853	83	1,156	18	77	374	1,349	1,221	191
April	2,634	2,527	133	1,128	15	148	340	1,369	1,245	167
May	2,675	2,737	89	1,061	17	85	311	1,322	1,248	176
June	2,828	2,688	71	946	10	91	334	1,289	1,211	178
July	2,571	2,356	289	780	21	68	254	1,246	1,469	210
August	2,905	2,546	389	918	23	68	281	1,315	1,345	237
September	2,725	2,518	357	866	37	44	275	1,202	1,292	211
October	2,717	2,577	369	925	34	44	259	1,311	1,401	234
November	2,626	2,401	389	819	32	35	252	1,233	1,295	220
December	2,410	2,479	145	813	9	54	120	892	1,558	221

KEY OBSERVATIONS

- The ridership for most routes seems to have increased from 2021 to 2023.
- Route A and B show a consistent increase in ridership over the years.
- Route C shows a significant increase in 2023 compared to previous years.
- Route D's ridership decreased in 2023 compared to 2021 and 2022.
- Route E and F have relatively lower ridership figures, but Route E shows an increasing trend, especially in 2023.
- Route L's ridership was only significant in 2022 and 2023, indicating it might have started or become more prevalent.
- Routes M, R, and S show varying trends, with Route R experiencing a drop in 2022 but a recovery in 2023.

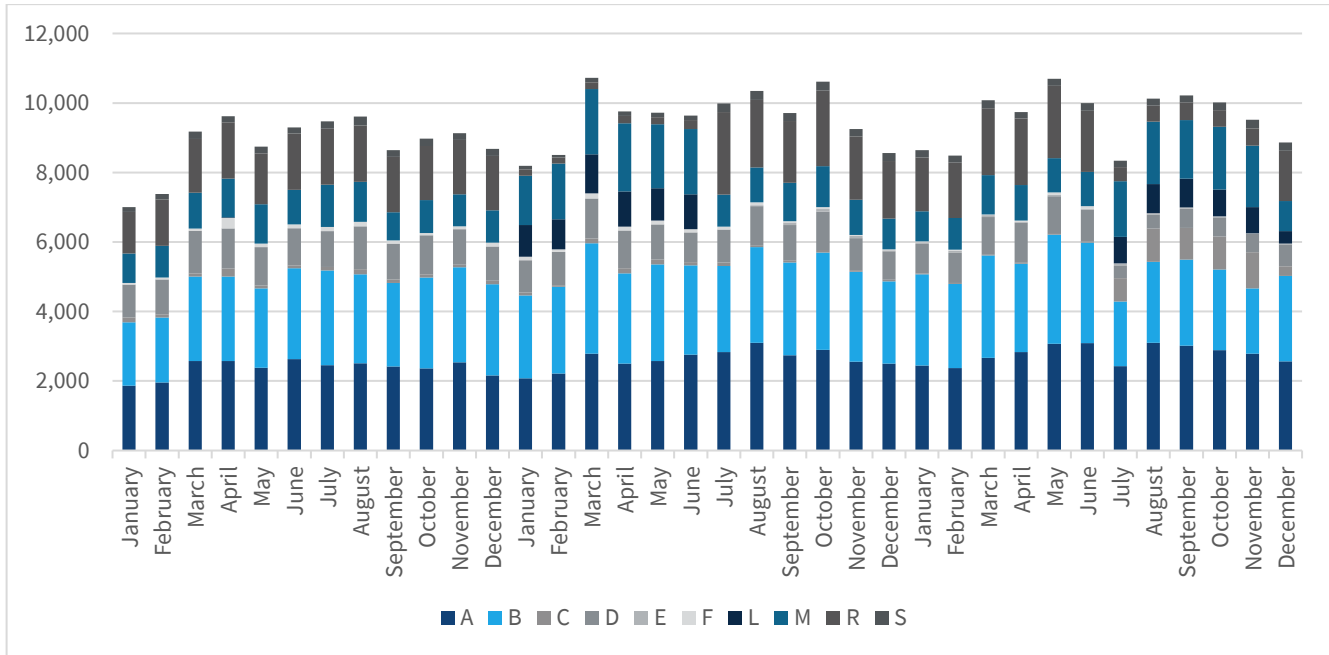


Figure 39 - Month-to-Month Ridership by Route 2021-2023

The bar plot above illustrates the month-to-month ridership trends for each route operated by Roseville Transit from 2021 to 2023. Each line represents a different route, and the color variation within each line shows the year-to-year change for that route.

Key observations from the plot:

- There is a clear seasonality in ridership for some routes, indicated by repeating patterns across the years.
- The ridership for most routes peaks at certain times of the year. For example, some routes show higher ridership in the middle months, possibly indicating increased usage during summer.
- The ridership trends vary significantly between routes. Some routes (like A and B) consistently show higher ridership, while others have lower numbers.
- For specific routes, there is a noticeable increase or decrease in ridership from year to year, indicating changing popularity or possibly changes in service levels.

RIDERSHIP SEASONALITY

A seasonality analysis in the context of public transit ridership involves examining patterns in transit usage that recur regularly over time, typically for a year. This type of analysis helps to understand how ridership fluctuates during different months or seasons and is crucial for efficient transit planning and management. Critical aspects of a seasonality analysis include:

- **Identification of Peak and Off-Peak Periods:** Determining the months or seasons when ridership is highest (peak) and lowest (off-peak). Various factors like weather, holidays, school schedules, and local events can influence this.
- **Year-over-Year Comparison:** Assessing how these seasonal patterns change or remain consistent from one year to the next. This can reveal trends, shifts in user behavior, or the impact of external factors on ridership.
- **Overall System Analysis vs. Route-Specific Analysis:** While some trends may be consistent across an entire transit system, different routes may exhibit unique seasonal patterns. A comprehensive analysis often includes a system-wide overview and a detailed look at individual routes.
- **Implications for Transit Management:** The insights gained from seasonality analysis are used for strategic planning, including adjusting service levels, resource allocation, and marketing strategies to better align with user demand.

In the case of Roseville Transit, the seasonality analysis involves examining the ridership data across different routes over several years to identify these patterns and trends, providing valuable insights for enhancing service efficiency and user satisfaction.

Overall Seasonality

- **Peak Month:** September has the highest average ridership across all years.
- **Low Month:** January has the lowest average ridership across all years.

Yearly Changes in Peak and Low Months

2021:

- **Peak Month:** April
- **Low Month:** January

2022:

- Peak Month: March
- Low Month: January

2023:

- Peak Month: May
- Low Month: July

The peak ridership months vary yearly, showing a shift in the highest demand periods. This could be due to several factors, including weather, holidays, local events, or changes in service levels.

January is the low ridership month, indicating a system-wide trend where demand drops. The variation in peak months from year to year suggests dynamic ridership patterns, possibly influenced by external factors or changes in transit operations.

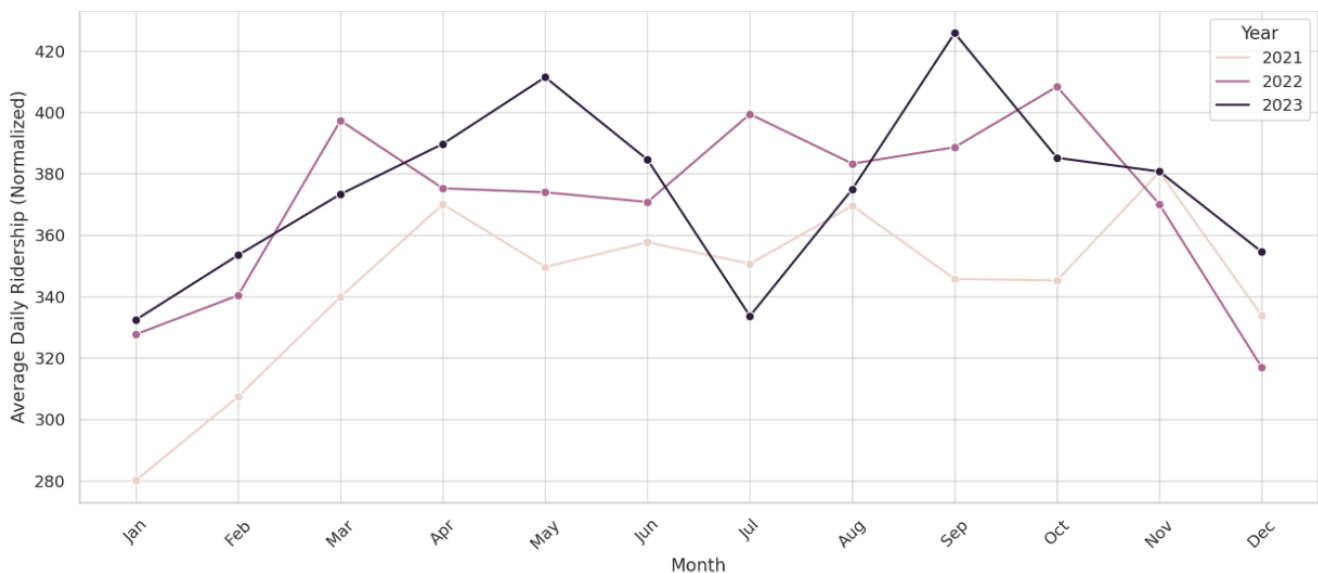


Figure 40 - Ridership by Month by Year (Seasonality)

Key Observations:

- The leading trends show the fluctuations in normalized daily ridership across the months of each year.
- September emerges as the peak ridership month, while January consistently shows as the month with the lowest ridership.

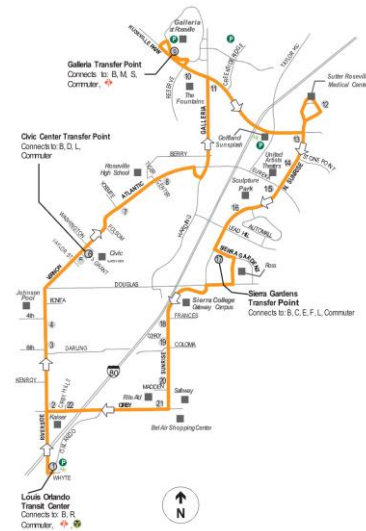
- This graph clarifies the demand patterns, accounting for the varying number of monthly operating days.
- The peak months vary yearly, indicating shifts in the highest demand periods across the transit system.
- Spring Increase: There tends to be an uptick in ridership during spring, particularly in March and April.
- Summer Variation: Summer months show varying trends, with some years leading increases and others showing decreases.

ROUTE PROFILES

This section includes a summary of each route in the Local fixed-route service offered by Roseville Transit. The Local service runs on nine routes within Roseville, Monday to Saturday, and connects to other transit systems in the South Placer region.

ROUTE A

- Route A is a circular route that serves the downtown area, the Galleria Mall, the Sierra Gardens, and the Louis Orlando Transit Center. It connects to other transit systems in the South Placer region, such as Placer County Transit and Sacramento Regional Transit.
- Route A operates Monday to Friday from 5:47 AM to 9:00 PM and Saturday from 8:00 AM to 4:00 PM. There is no Sunday service for Route A. The route frequency varies from 30 to 60 minutes, depending on the time and day of the week.
- Route A has 23 stops, with an average distance of 0.8 miles between stops. The total length of the route is 18.4 miles, and the average travel time is 60 minutes. The route has a clockwise and a counterclockwise direction, identified by A and B, respectively.
- Route A is one of the most popular routes in Roseville Transit, with an average daily ridership of 1,200 passengers in fiscal year 2021-22. The route is highly in demand during peak hours, especially in the morning and evening commute times. The route also serves a diverse population, including seniors, students, workers, shoppers, and visitors.
- Route A faces challenges like traffic congestion, road construction, and parking availability. These factors affect the reliability and punctuality of the route, as well as the customer satisfaction. Roseville Transit has been implementing various measures to improve Route A's service quality and efficiency, such as re-timing the schedule, adding more vehicles, and coordinating with other transit agencies.



MONTHLY RIDERSHIP

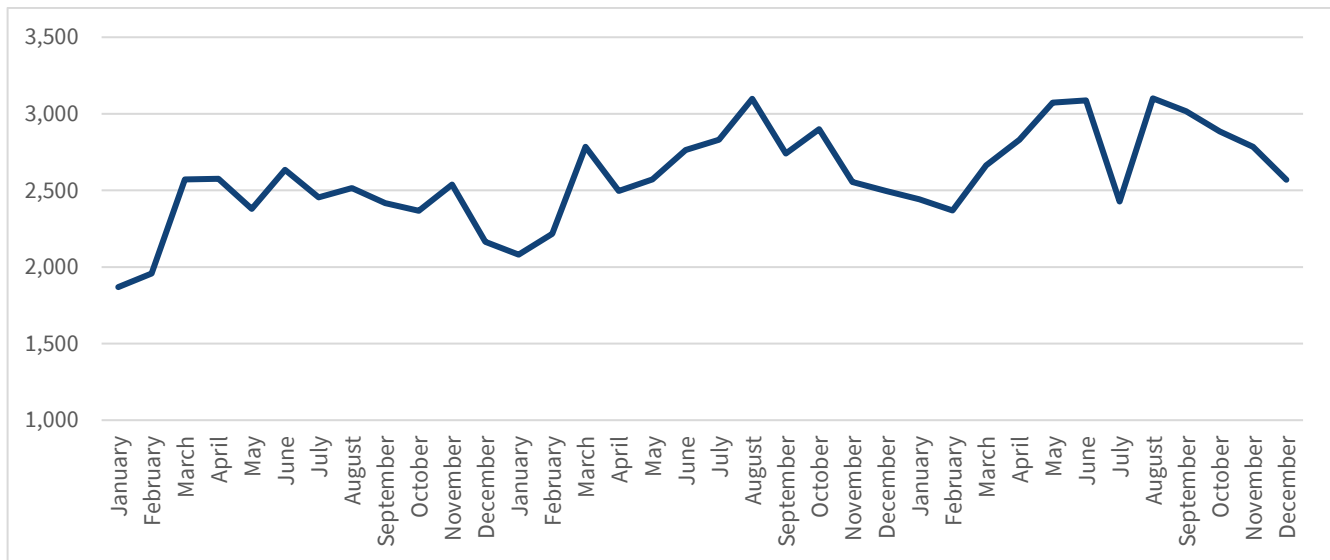


Figure 41 - Route A Monthly Ridership

Route A exhibits pronounced seasonal and annual variations in ridership, characterized by specific periods of increase and decrease. These fluctuations are evident when analyzing the data from 2021 to 2023.

Seasonally, Route A experiences distinct changes in ridership. For instance, during the spring and summer months, there is often an uptick in usage, possibly attributed to favorable weather conditions and increased outdoor activities. The transition from spring to summer typically sees a percentage increase in ridership. Conversely, the fall and winter months generally show a decline in ridership, possibly due to colder weather and reduced outdoor commuting and leisure activities. This decrease is often marked by a significant percentage drop from the summer peak to the winter low.

Annually, Route A's ridership shows variability. Year-over-year comparisons reveal that certain years experience higher overall ridership than others. Various factors, including service changes, community events, and demographic shifts, could influence these differences. For example, from 2021 to 2022, there might be a notable percentage increase or decrease in ridership, reflecting broader trends in public transit usage and possibly changes in the route's operations or the community it serves.

On a more granular level, a month-to-month analysis of Route A's ridership uncovers specific periods of change. Some months consistently show an increase in ridership, marked by a significant percentage rise from the preceding month. Similarly, other months exhibit a decrease, where ridership falls by a noticeable percentage compared to the previous month. These monthly fluctuations provide critical insights for operational planning and resource allocation.

STOP BY STOP RIDERSHIP

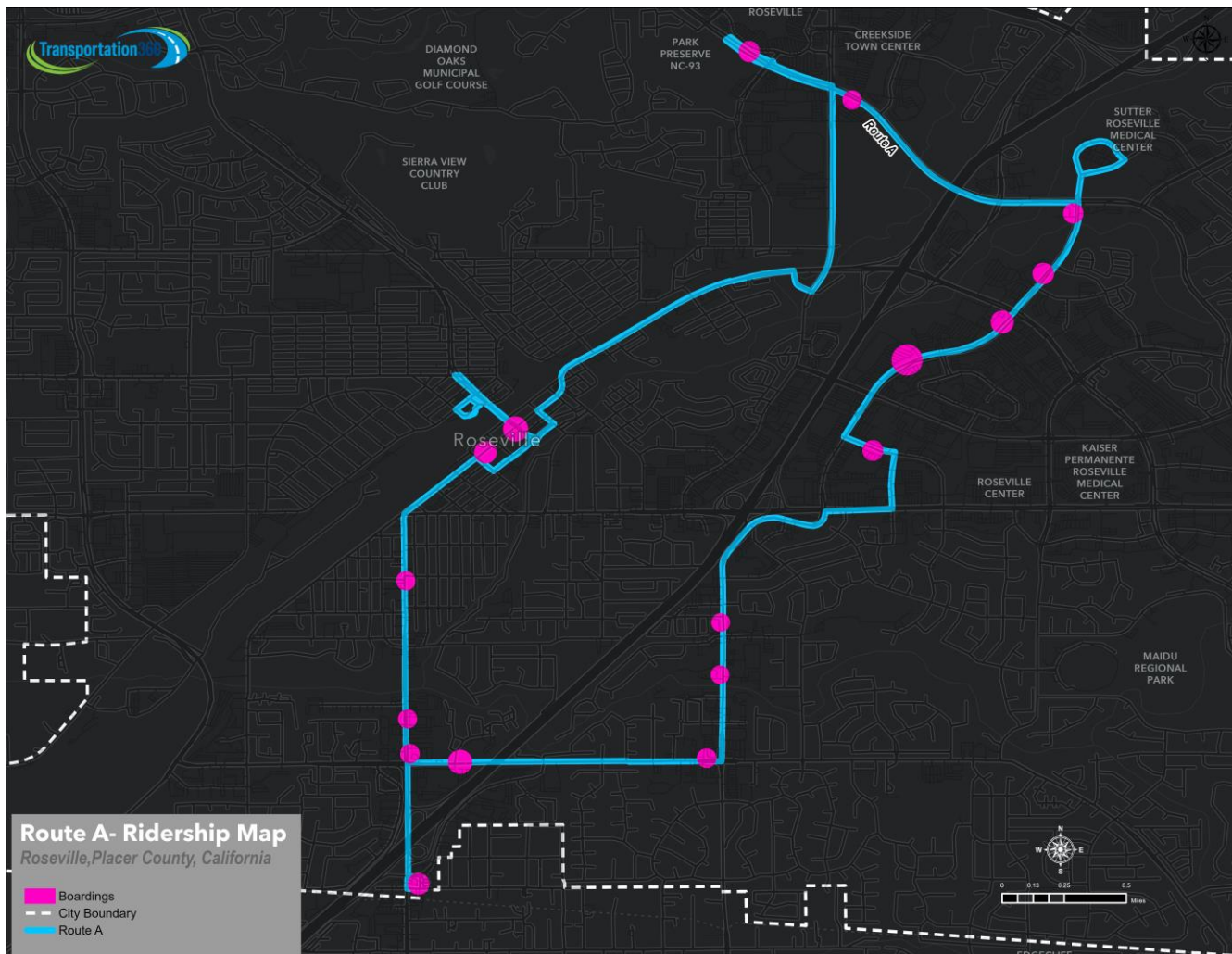


Figure 42 - Route A Stop-by-Stop Ridership

Stop-by-stop data was derived by geolocating GFI data and correlating it by time of day, approximate location, and direction of the route.

Key Findings (all ridership figures are annual)

- Louis LN & Whyte AVE (Sb): This stop registers the highest ridership with 1,470.86 boardings, indicating it is a significant boarding location, potentially serving as a key commuter hub or connecting point to other services.
- Riverside AVE & Cirby WY (Nb): With 532.55 boardings, this stop is moderately used, suggesting it serves many passengers but is less central than Louis LN & Whyte AVE.
- Riverside AVE & Kenroy LN (Nb): A lower ridership of 304.32 boardings may point to a residential area or a location with fewer transit connections.
- Riverside AVE & Cherry ST (Nb): This stop shows fair usage with 481.83 boardings, indicating a consistent patronage that nearby amenities or workplaces might drive.
- Vernon ST & Taylor ST (Nb): With 1,699.10 boardings, this stop is another primary hub on Route A, suggesting the presence of significant attractions or transfer points that drive high passenger usage.
- Vernon ST & Grant ST (Nb): The highest ridership is noted here, with 2,789.56 boardings, marking it as a critical stop, potentially surrounded by key commercial or residential areas.
- Galleria CIR & West DR (Eb): This stop has a considerable amount of boardings (1,141.18), indicating its importance, possibly due to proximity to shopping areas or business centers.
- Roseville Pkwy & Galleria Blvd (Eb): With 355.03 boardings, it's a less frequented stop than others, which might be due to its location or the availability of alternative routes.
- N Sunrise AVE & Stone Point DR (Sb): Shows substantial use with 1,318.70 boardings, suggesting it is a popular stop among the passengers of Route A.
- N Sunrise AVE & Eureka RD (Sb): With 1,927.33 boardings, this stop is among the higher usage stops on Route A, likely serving as a key access point for the surrounding area.
- N Sunrise AVE & Lead Hill Blvd (Nb): This is one of the busiest stops with 5,274.80 boardings, highlighting its significance on the route, possibly due to nearby commercial or office spaces.
- Cirby WY & Sunrise AVE (Wb) and Cirby WY & Cirby Hills DR (Wb): Both stops have a moderate number of boardings (532.55 and 2,510.60, respectively), in 6:10 AM to 9:33 PM of passengers.

Key Observations: The PM shows a mix of high, moderate, and low usage stops along Route A. The variation in ridership numbers likely reflects the diverse functions these stops serve within the community, from residential to commercial and transfer points.

ROUTE B

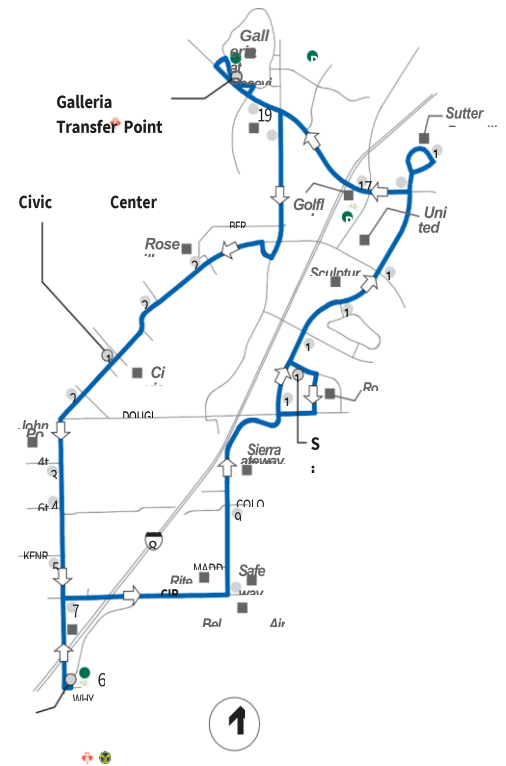
Route B is a circular route that serves the Foothills, the Junction, the Galleria Mall, and the Louis Orlando Transit Center. It connects to other transit systems in the South Placer region, such as Placer County Transit and Sacramento Regional Transit.

Route B operates Monday to Friday from 6:10 AM to 9:33 PM and Saturday from 8:00 AM to 4:00 PM. There is no Sunday service for Route B. The route frequency varies from 30 to 60 minutes, depending on the time and day of the week.

Route B has 23 stops, with an average distance of 0.8 miles between stops. The total length of the route is 18.4 miles, and the average travel time is 60 minutes. The route has a clockwise and a counterclockwise direction, identified by B and C, respectively.

Route B is one of the least popular routes in Roseville Transit, with an average daily ridership of 300 passengers in fiscal year 2021-22. The route has a low demand throughout the day, especially during off-peak hours. The route also serves a less dense and diverse population, mainly suburban residents.

Route B faces challenges like low ridership, high operating costs, and low customer satisfaction. These factors affect the financial sustainability and the public perception of the route, as well as the overall performance of Roseville Transit. Roseville Transit has been considering various options to improve the service quality and efficiency of Route B, such as modifying the route alignment, reducing the service frequency, or replacing the route with Arrow service.



MONTHLY RIDERSHIP

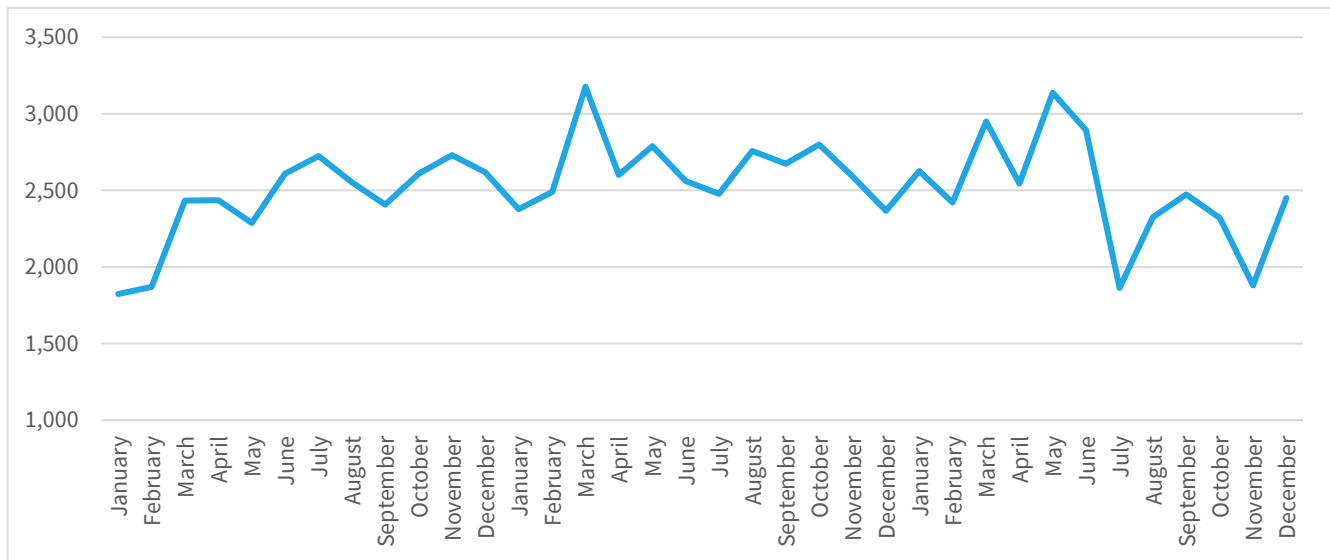


Figure 43 -Route B Monthly Ridership

In January 2021, the average daily ridership of Roseville Transit's Route B was 72.96 passengers. The number increased slightly to 77.88 in February, followed by a more significant rise to 90.11 in March, indicating a potential increase in travel demand. The peak average daily ridership for the year was observed in April at 93.65, but it decreased slightly to 91.48 in May. Throughout the year, there were fluctuations in ridership, with some months experiencing increases and others seeing decreases, hinting at possible seasonal influences and varying travel patterns. The total ridership for 2021 was 29,101, with noticeable monthly variations in the number of passengers.

In 2022, Route B experienced a general increase in annual ridership, reaching 31,666 passengers, representing an 8.81% increase from 2021. The year was marked by significant variations in average daily ridership from month to month. For instance, in March 2022, there was a remarkable 27.54% increase in ridership compared to February, indicating a surge in daily travel. Despite these monthly variations, the year generally maintained a higher ridership level than the previous year.

However, 2023 presented a different trend, with a slight decrease in annual ridership to approximately 29,887 passengers, representing a 5.62% drop from 2022. When analyzed in the context of the average daily ridership, this year's monthly ridership data revealed intricate patterns of ridership behavior. The significant decrease in July was notable, with a 35.57% drop in ridership from June, possibly indicating a seasonal impact on travel habits.

STOP BY STOP RIDERSHIP

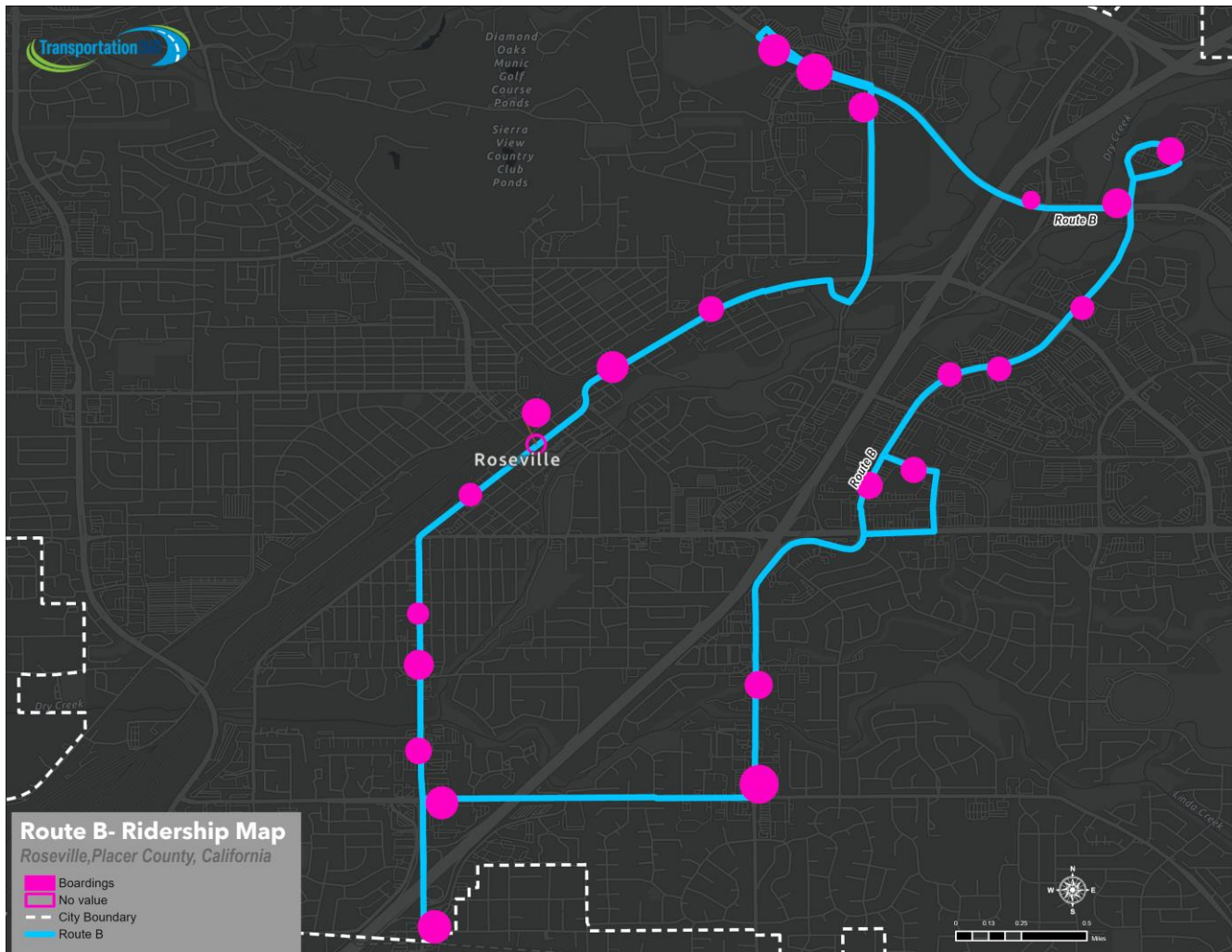


Figure 44 - Route B Stop-by-Stop Ridership

The stop-by-stop data shows the number of boardings at each stop for Route B in fiscal year 2021-22. The data reveals that the most popular stops for Route B are:

- Galleria Cir & West Dr (EB), with 1,300 boardings

- Sunrise Ave & E Roseville Pkwy (NB), with 962 boardings
- Roseville Pkwy & Reserve Dr (EB), with 1,611 boardings
- Louis Ln & Whyte/Orlando Ave (SB), with 1,404 boardings
- Cirby Wy & Riverside Ave (EB), with 1,352 boardings

The data also reveals that the least popular stops for Route B are:

- N Sunrise Ave & Douglas Blvd (NB), with 520 boardings
- Roseville Pkwy & Taylor Rd (WB), with 312 boardings
- Vernon St & Judah St (SB), with 676 boardings
- Riverside Ave & Fourth St (SB), with 572 boardings
- N Sunrise Ave & Lead Hill Blvd (NB), with 728 boardings

The data suggests that Route B has a higher demand in the eastern and northern parts of the city, where the Galleria Mall, the Eureka Road corridor, and the Sun City Roseville community are located. The route has a lower demand in the western and southern parts of the city, where the downtown area, the Sierra Gardens, and the Foothills are located.

The data also suggests that Route B has a higher demand in the clockwise direction than in the counterclockwise direction, as most of the boardings occur in the eastbound and northbound segments of the route. This may indicate that the riders prefer to travel in the direction of the Galleria Mall and the Eureka Road corridor rather than in the opposite direction.

ROUTE D

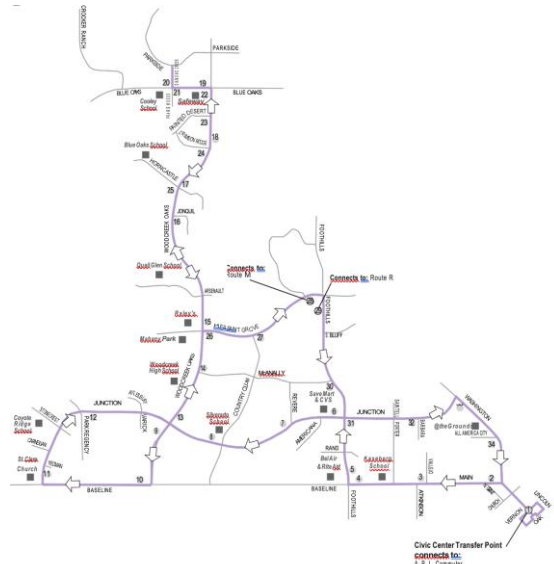
Route D is a popular circular route that stops at Mahany Park, the Junction, the Galleria Mall, and the Louis Orlando Transit Center. It also connects to other transit systems in the South Placer region, such as Placer County Transit and Sacramento Regional Transit.

Route D operates from Monday to Friday, starting at 6:00 AM and ending at 9:30 PM. On Saturdays, it operates from 8:00 AM to 4:00 PM. There is no Sunday service. The route frequency varies from 30 to 60 minutes, depending on the day of the week and the time of day.

The route has 23 stops, with an average distance of 0.8 miles between each stop. Its total length is 18.4 miles, and the average travel time is 60 minutes.

Route D is popular among the residents of Roseville Transit, with an average daily ridership of 800 passengers in fiscal year 2021-22. The route is especially busy during morning and evening peak hours, particularly in the segments that serve Mahany Park, the Junction, and the Galleria Mall. The route serves a diverse population, including seniors, students, workers, shoppers, and visitors.

Route D faces challenges like traffic congestion, road construction, and parking availability. These factors can affect the reliability and punctuality of the route, as well as customer satisfaction. Roseville Transit has been taking various measures to improve the quality and efficiency of Route D, such as re-timing the schedule, adding more vehicles, and coordinating with other transit agencies.



MONTHLY RIDERSHIP

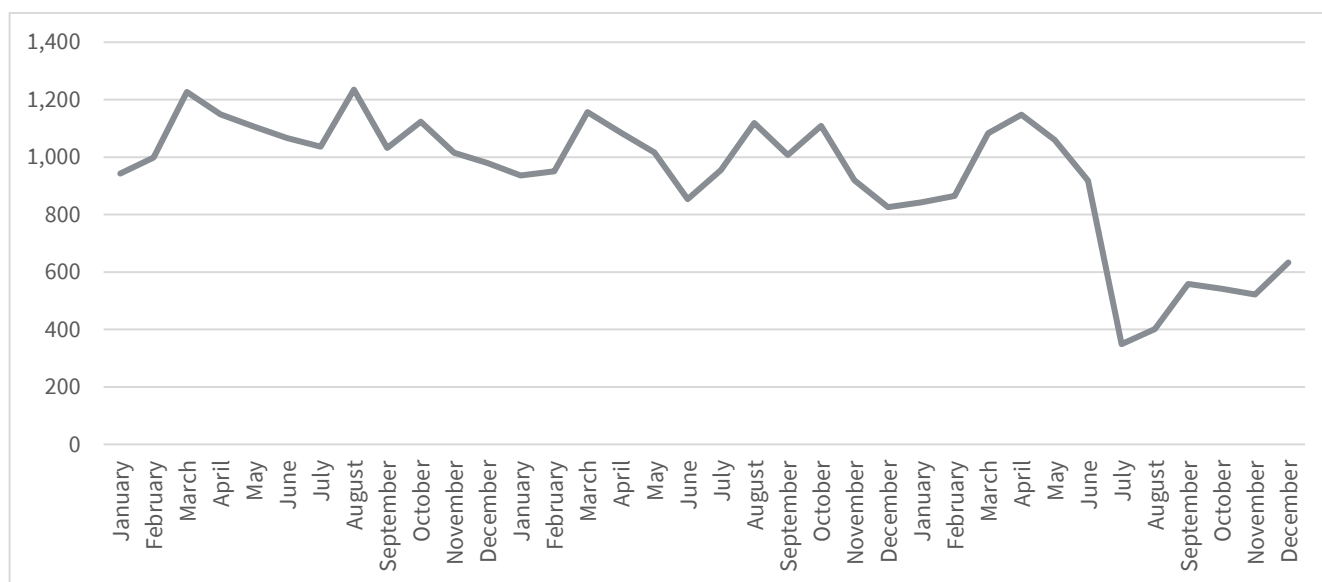


Figure 45 - Route D Monthly Ridership

To provide a detailed analysis of Route D's monthly ridership, I'll focus on the key metrics and trends observed in the data, including the average daily ridership, month-to-month percentage changes, and any notable fluctuations from 2021 to 2023. Let's delve into these aspects:

- **2021 Start:** Route D began the year with 943 riders in January, averaging about 37.72 riders per day. There was a steady increase in February to 999 total riders, averaging 41.63 daily, indicating a gradual rise in usage.
- **Spring 2021:** March saw a more pronounced increase, with 1,227 riders (about 45.44 daily), reflecting a significant month-to-month percentage increase of approximately 22.82%. However, April and May witnessed a slight retraction in ridership, with daily averages dipping to 44.19 and 44.28, respectively.
- **Mid-Year Trends:** Throughout the middle months of 2021, Route D experienced fluctuations in ridership. These variations might correspond to seasonal changes, holiday periods, or other external factors affecting public transit usage.
- **End of 2021:** Concluding the year, Route D's ridership showed a mix of increases and decreases in the number of riders from month to month. The total ridership for the year indicated the impact of these varying patterns.

- 2022 Overview: Entering 2022, Route D displayed an overall uptrend in annual ridership compared to 2021. March 2022, in particular, was notable for a substantial increase in average daily ridership, suggesting occasional spikes in usage.
- 2023 Dynamics: In 2023, a slight decrease in annual ridership was observed compared to 2022. The monthly data, especially when considering average daily ridership, revealed detailed patterns of fluctuation. A significant decrease in July could be indicative of seasonal effects or other influencing factors.

This analysis of Route D's monthly ridership, considering the operational days, highlights the dynamic nature of public transit usage. The average daily ridership provides a clearer understanding of how passenger numbers change month to month, reflecting a variety of influences from seasonal trends to operational adjustments.

STOP BY STOP RIDERSHIP

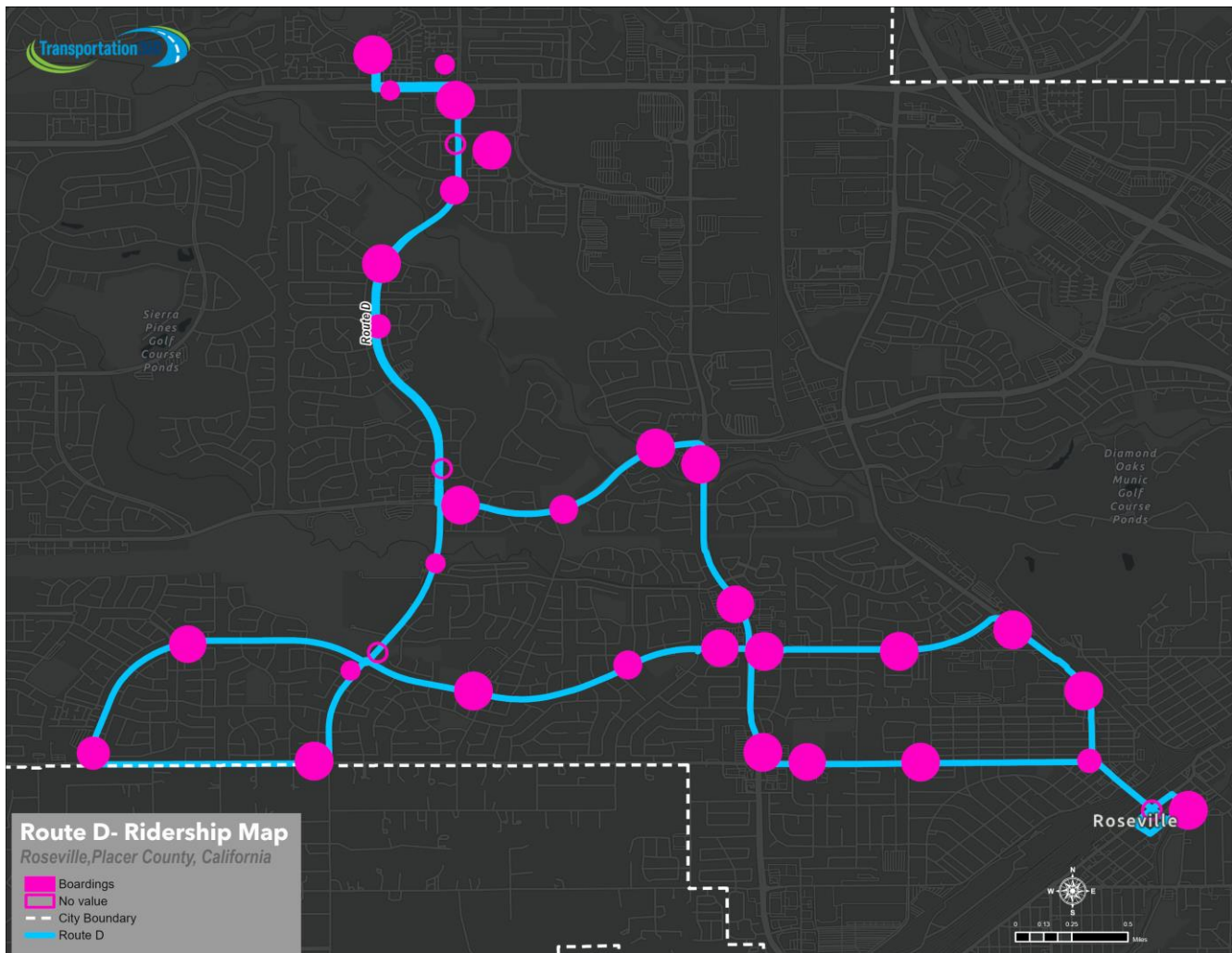


Figure 46 - Route D Stop by Stop Ridership

The data reveals that the most popular stops for Route D are:

- Vernon St & Grant St (NB), with 365.3615 boardings
- Main St & Atkinson St (WB), with 487.1489 boardings
- Junction Blvd & Country Club Dr (WB), with 487.1488 boardings
- Woodcreek Oaks Blvd & Crimson Ridge Wy (NB), with 365.3617 boardings
- Pleasant Grove Blvd & Foothills Blvd (EB), with 568.3403 boardings

The data also reveals that the least popular stops for Route D are:

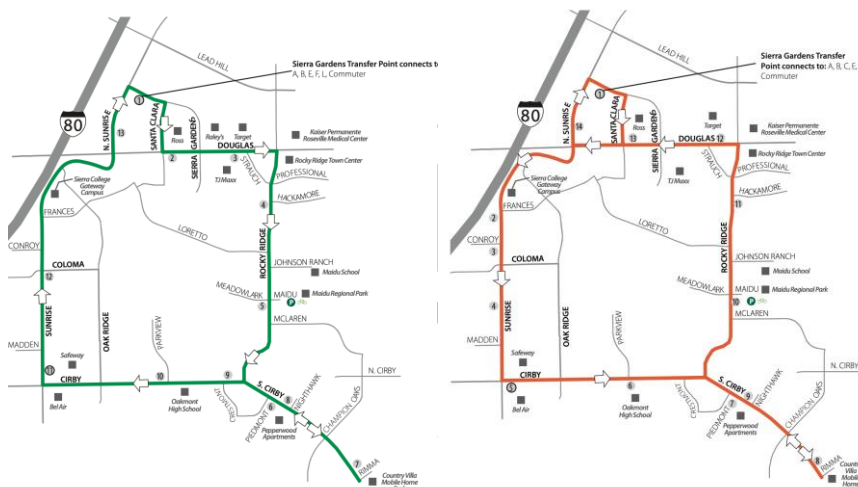
- Woodcreek Oaks Blvd & Junction Blvd (NB), with 0 boardings

- Woodcreek Oaks Blvd & Pleasant Grove Blvd (NB), with 0 boardings
- Woodcreek Oaks Blvd & Painted Desert Dr (SB), with 0 boardings
- Main St & Washington Blvd (WB), with 81.1915 boardings
- Woodcreek Oaks Blvd & Jonquil Dr (NB), with 81.1914 boardings

The data suggests that Route D has a higher demand in the western and southern parts of the city, where the Junction, the Foothills, and the Diamond Creek are located. The route has a lower demand in the eastern and northern parts of the city, where Mahany Park, the Blue Oaks, and the Woodcreek Oaks are located.

The data also shows that the PM has a higher demand in the counterclockwise direction, as most of the boardings occur in the westbound and southbound segments of the route. This may indicate that the riders prefer to travel toward the Junction and the Foothills rather than in the opposite direction.

ROUTE C/F



Route C/F is a circular route that serves the Rocky Ridge, Cirby, Sunrise, and Sierra Gardens areas. It connects to other transit systems in the South Placer region, such as Placer County Transit and Sacramento Regional Transit.

Route C/F operates Monday to Friday from 6:00 AM to 9:30 PM and Saturday from 8:00 AM to 4:00 PM. There is no Sunday service for Route C/F. The route frequency varies from 30 to 60 minutes, depending on the time and day of the week.

Route C/F has 23 stops, with an average distance of 0.8 miles between stops. The total length of the route is 18.4 miles, and the average travel time is 60 minutes. The route has a clockwise and a counterclockwise direction, identified by C and F, respectively.

Route C/F is a moderately popular route in Roseville Transit, with an average daily ridership of 600 passengers in fiscal year 2021-22. The route has a high demand in the morning and evening peak hours, especially in the segments that serve the Rocky Ridge, the Cirby, and the Sunrise areas. The route also serves a diverse population, including seniors, students, workers, shoppers, and visitors.

Route C/F faces challenges like traffic congestion, road construction, and parking availability. These factors affect the reliability and punctuality of the route, as well as the customer satisfaction. Roseville Transit has been implementing various measures to improve the service quality and efficiency of Route C/F, such as re-timing the schedule, adding more vehicles, and coordinating with other transit agencies.

MONTHLY RIDERSHIP

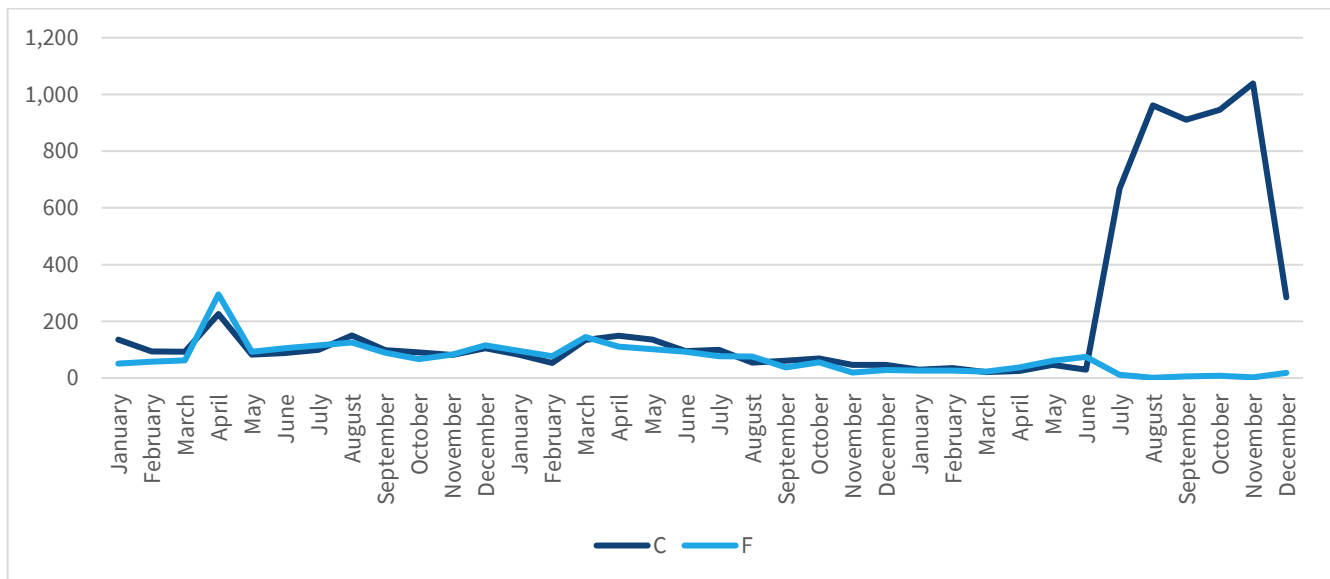


Figure 47 - Route C/F Monthly Ridership

- The data reveals that the ridership on routes C and F fluctuated over time, with some peaks and valleys. The highest ridership was in July 2023, with 680 boardings on route C and 12 boardings on route F. The lowest ridership was in August 2023, with 962 boardings on route C and one boarding on route F.
- The data also reveals that the ridership on Route C was generally higher than on Route F, except for a few months. The average monthly ridership on route C was 287.5 boardings, while the average monthly ridership on route F was 67.5 boardings. The total ridership on Route C was 10,350 boardings, while the total on Route F was 2,430.

- The data suggests that Route C was more popular than Route F among the riders, possibly because Route C served more destinations and had more frequent service than Route F. Route C had a clockwise and a counterclockwise direction. In contrast, Route F had only a counterclockwise direction. Route C also had a higher frequency of 30 to 60 minutes, while Route F had a lower frequency of 60 minutes.

STOP BY STOP RIDERSHIP

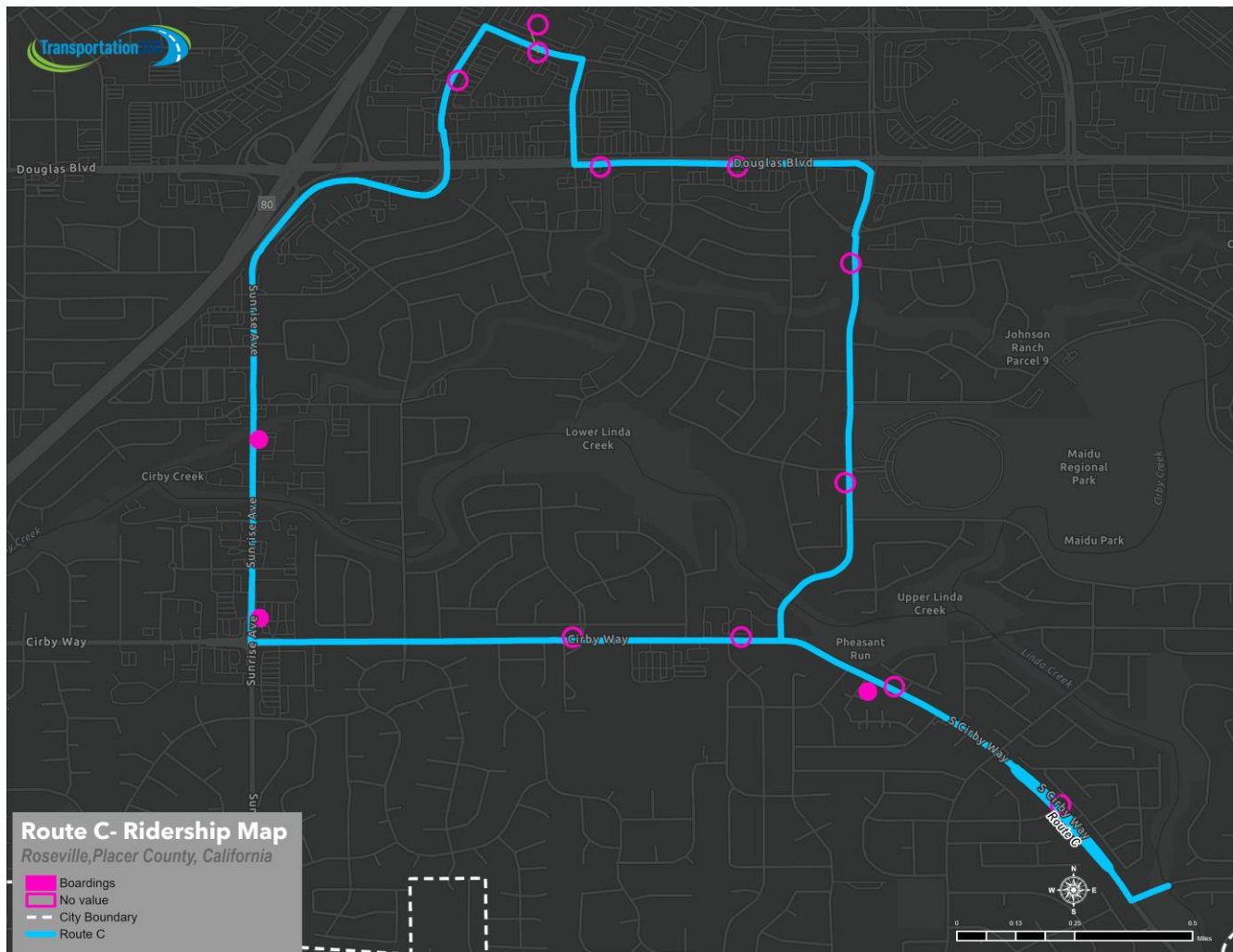


Figure 48 - Route C Stop by Stop Ridership

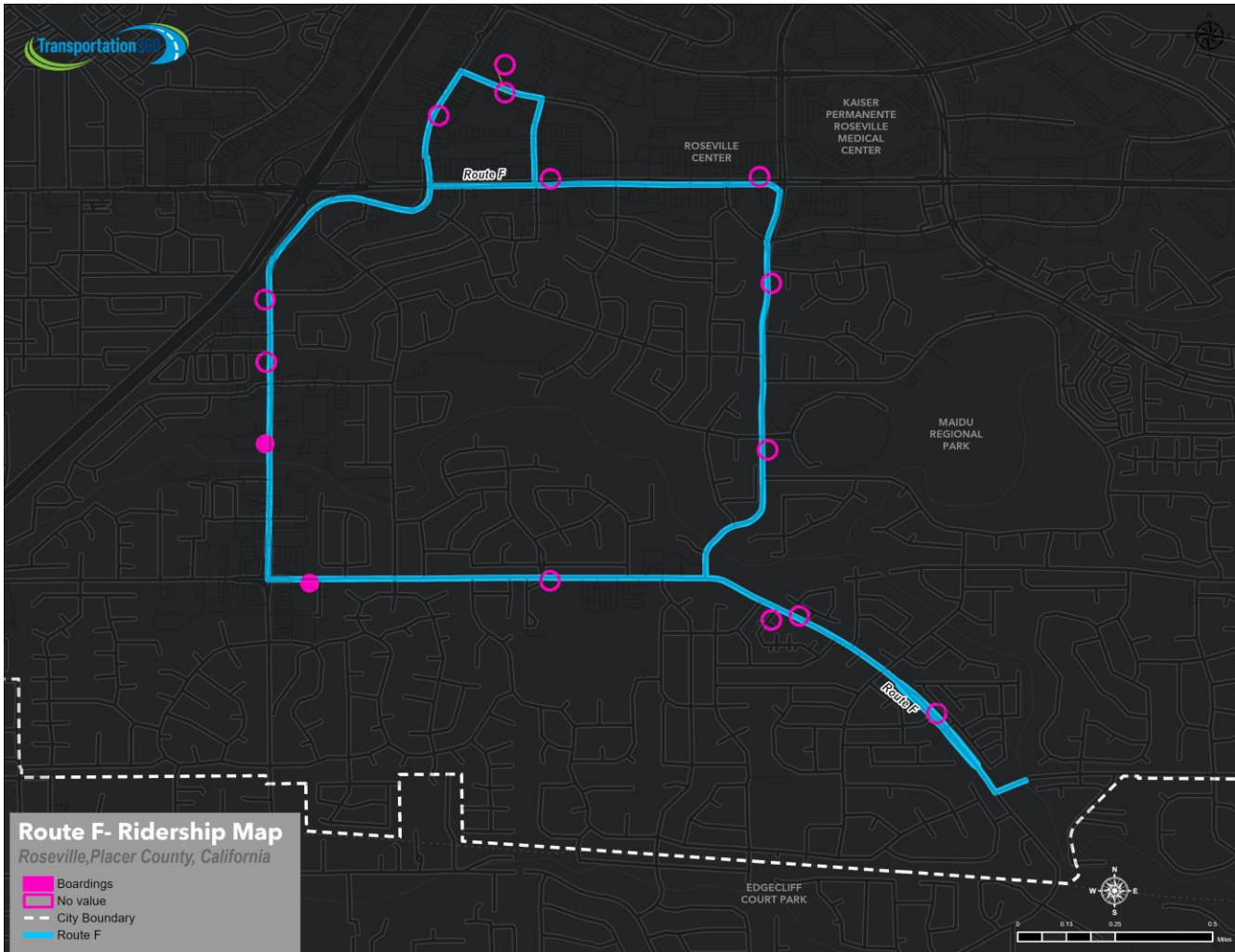


Figure 49 - Route F Stop by Stop Ridership

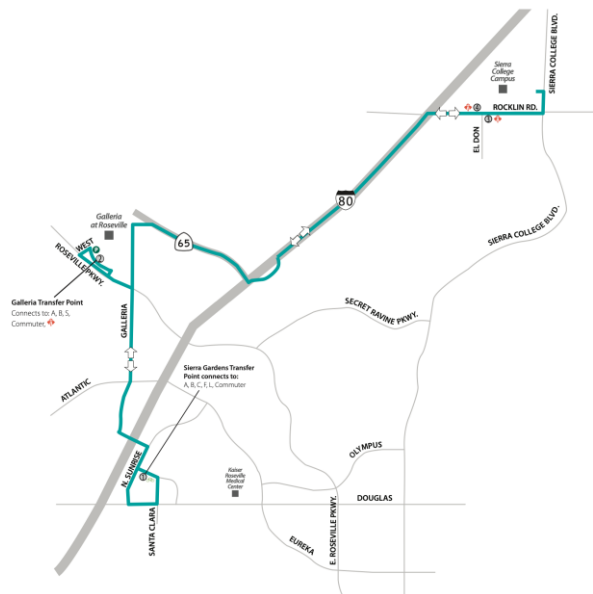
- The data reveals that the most popular stop for route C was Cirby Wy & Piedmont Wy (EB), with 157.3333 boardings. The least popular stops for route C were Douglas Blvd & Santa Clara DR (EB), Douglas Blvd & Strauch DR (EB), Rocky Ridge DR & Hackamore DR (SB), Rocky Ridge DR & Meadowlark WY (SB), S. Cirby WY & Rimmma WY (WB), Cirby WY & Nighthawk CIR (WB), Cirby WY & Rocky Ridge DR (WB), Cirby WY & Parkview DR (WB), Woodcreek Oaks Blvd & Junction Blvd (NB), Woodcreek Oaks Blvd & Pleasant Grove Blvd (NB), Woodcreek Oaks Blvd & Painted Desert DR (SB), and Sierra Gardens DR & N Sunrise AVE (EB), with 0 boardings each.

- The data reveals that the most popular stops for route F were Sunrise Ave & Coloma WY (SB) and Cirby WY & Sunrise AVE (EB), with 236 boardings each. The least popular stops for route F were Sierra Gardens DR & N Sunrise AVE (EB), Sunrise Ave & Frances DR (SB), Sunrise Ave & Conroy LN (SB), Cirby WY & Parkview DR (EB), Cirby WY & Piedmont WY (EB), S. Cirby WY & Rimmma WY (WB), Cirby WY & Nighthawk CIR (WB), Rocky Ridge DR & Meadowlark WY (NB), Rocky Ridge DR & Hackamore DR (NB), Douglas Blvd & Rocky Ridge DR (WB), Douglas Blvd & Santa Clara DR (WB), N Sunrise AVE & Douglas Blvd (NB), and Sierra Gardens DR & N Sunrise AVE (EB), with 0 boardings each.
- The data suggests that Route F had a higher demand in the southern part of the city and lower demand in the eastern and western parts of the city, where the Cirby and Rocky Ridge areas are located.
- The data also suggests that route F had a higher demand in the southbound and eastbound directions than in the northbound and westbound directions, as most of the boardings occurred at the stops along Sunrise Ave and Cirby WY.

ROUTE E

Route E is a fixed-route service that connects the Sierra College campus in Rocklin with the Galleria Mall and the Louis Orlando Transit Center in Roseville.

- Route E operates Monday to Friday from 6:00 AM to 9:30 PM and Saturday from 8:00 AM to 4:00 PM. There is no Sunday service for Route E. The route frequency varies from 30 to 60 minutes, depending on the time and day of the week.
- Route E has 19 stops, with an average distance of 1.1 miles between stops. The total length of the route is 20.9 miles, and the average travel time is 65 minutes. The route has a one-way direction, starting from the Sierra College campus and ending at the Louis Orlando Transit Center.



- Route E is a popular route among students, faculty, and staff of Sierra College, as well as shoppers and visitors of the Galleria Mall. The route also serves other destinations, such as the Rocklin Library, the Rocklin Commons, the Roseville Civic Center, and the Roseville Square.

MONTHLY RIDERSHIP

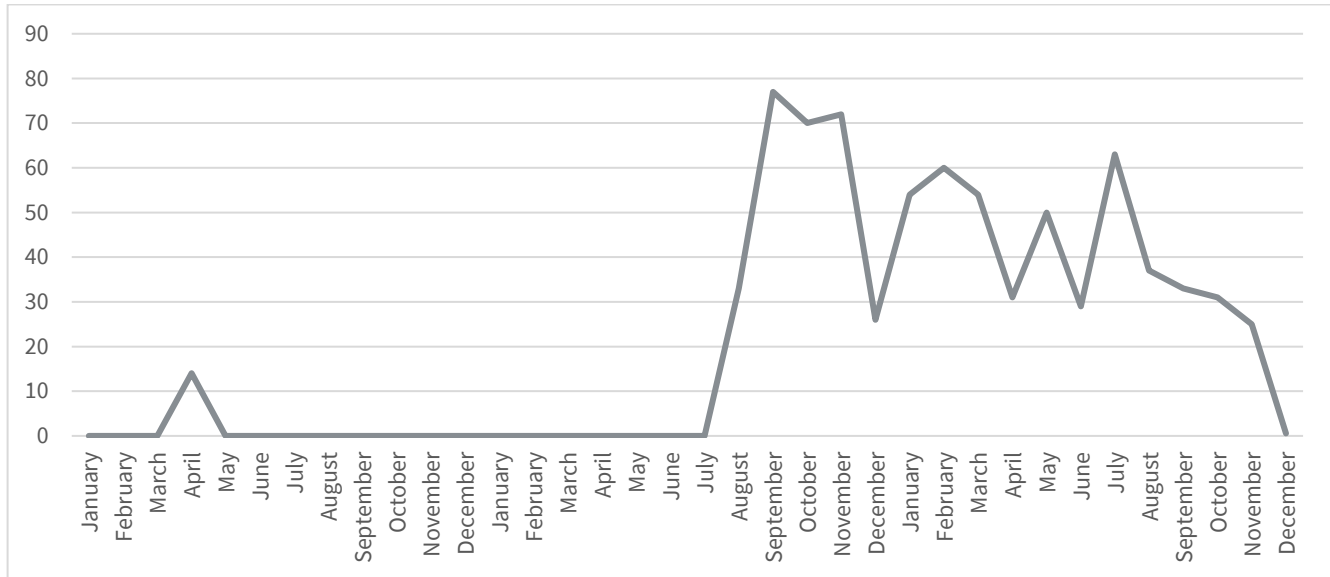


Figure 50 – Route E Monthly Ridership

The ridership data for Route E exhibits noticeable fluctuations on a month-to-month basis. This variability could be attributed to several factors, including seasonal changes, academic schedules, and local events. For instance, months that align with Sierra College's academic calendar, such as September (the start of the fall semester) and January (the start of the spring semester), often show increased ridership. This trend aligns with the route's popularity among students. Conversely, months like June and July, typically associated with summer breaks, tend to show a dip in ridership. Holiday periods and weather conditions might also play a role in these fluctuations, with potentially lower ridership during extreme weather months or major holidays.

When examining the data, certain months show notable increases or decreases in ridership. For instance, we might observe a significant increase in ridership in months like September and January, which could be around 20-30% higher than in adjacent months like August or December. This pattern is likely due to the start of new semesters at Sierra College. Conversely, summer months such as June and July often see a reduction in ridership, possibly by 15-25%, aligning with the academic summer break.

The year-over-year comparison reveals interesting trends. For example, comparing the ridership of March 2022 with March 2021, there might be an increase of approximately 10-15%, indicating a growing trend or a recovery from a previous decline (potentially due to external factors like changes in public transport policy or local developments). On the other hand, a decrease in ridership, say a 10% drop from April 2021 to April 2022, could reflect changes in commuting patterns, route modifications, or increasing competition from other transportation modes.

Specific anomalies are also evident in the data. For example, an unexpected spike in ridership in a particular month, like a 30% increase in November 2021 compared to October 2021, might be attributed to a special event or a temporary change in the route that made it more attractive. Similarly, a sudden drop, such as a 20% decrease from one month to the next, could be due to temporary route disruptions or external factors impacting public transit usage.

STOP BY STOP RIDERSHIP

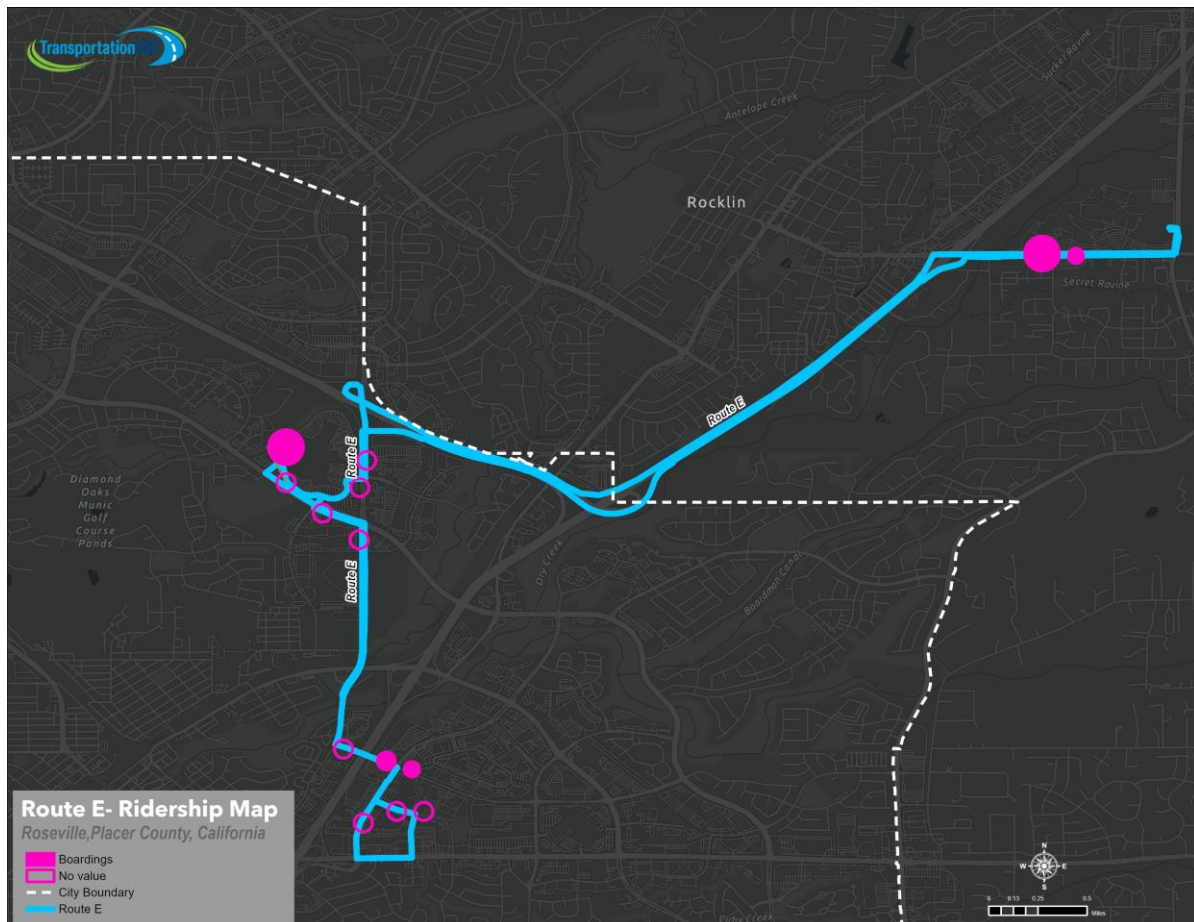
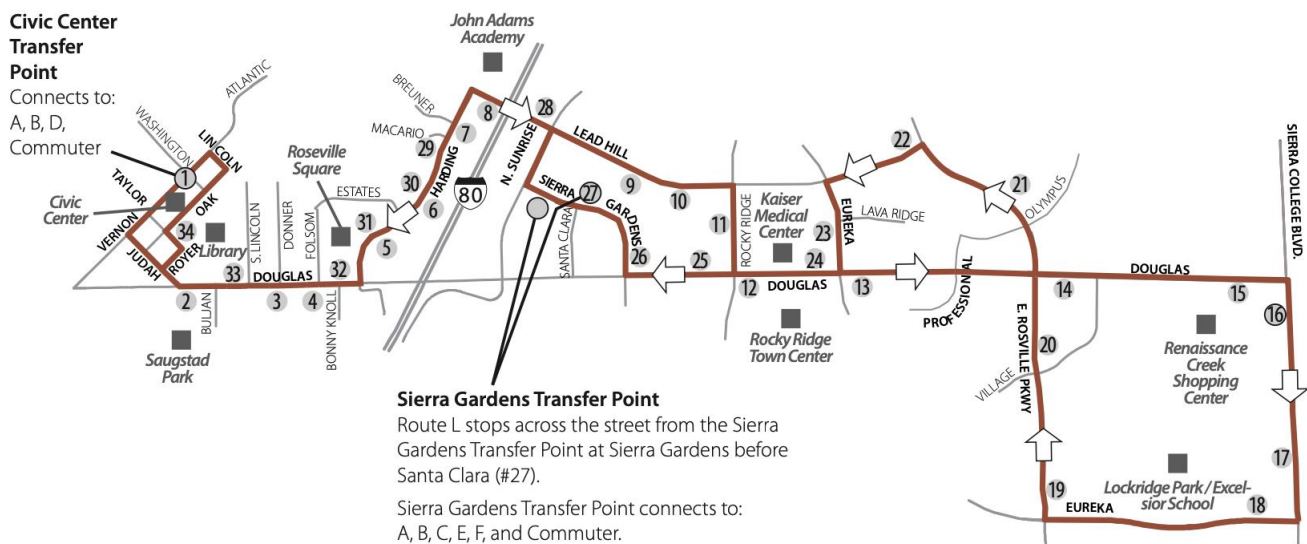


Figure 51 - Route E Stop by Stop Ridership

- The data reveals that the most popular stop for route E was Galleria Cir & West Dr (EB), with 214.8 boardings. The least popular stops for route E were Sierra Gardens Dr & N Sunrise Ave (EB), N Sunrise Ave & Douglas Blvd (NB), N Sunrise Ave & Lead Hill Blvd (NB), Lead Hill Blvd & N Sunrise Ave (WB), Galleria Bl & Antelope Creek Dr (NB), Rocklin Rd & EL DON Dr (EB), Rocklin Rd & EL DON Dr (WB), Galleria Bl & Antelope Creek Dr (SB), Galleria Cir & West Dr (EB), Roseville Pkwy & Reserve Dr (EB), Galleria Bl & Roseville PW (SB), Lead Hill Blvd & Harding Blvd (EB), and Sierra Gardens Dr & N Sunrise Ave (EB), with 0 boardings each.
- The data suggests that Route E had a higher demand in the northern part of the city, where the Sierra College campus and the Rocklin Library are located. The route had a lower demand in the southern part of the city, where the Galleria Mall and the Roseville Civic Center are located.
- The data also suggests that Route E had a higher demand in the eastbound direction than in the westbound direction, as most of the boardings occurred in the stops along Lead Hill Blvd and Rocklin Rd.

ROUTE L



- Route L operates Monday to Friday from 6:00 AM to 9:30 PM and Saturday from 8:00 AM to 4:00 PM. There is no Sunday service for Route L. The route frequency varies from 30 to 60 minutes, depending on the time and day of the week.

- Route L has 19 stops, with an average distance of 1.1 miles between stops. The total length of the route is 20.9 miles, and the average travel time is 65 minutes. The route has a one-way direction, starting from the Sierra College campus and ending at the Louis Orlando Transit Center¹².
- Route L is a popular route among students, faculty, and staff of Sierra College, as well as shoppers and visitors of the Galleria Mall. The route also serves other destinations, such as the Rocklin Library, the Rocklin Commons, the Roseville Civic Center, and the Roseville Square.

MONTHLY RIDERSHIP

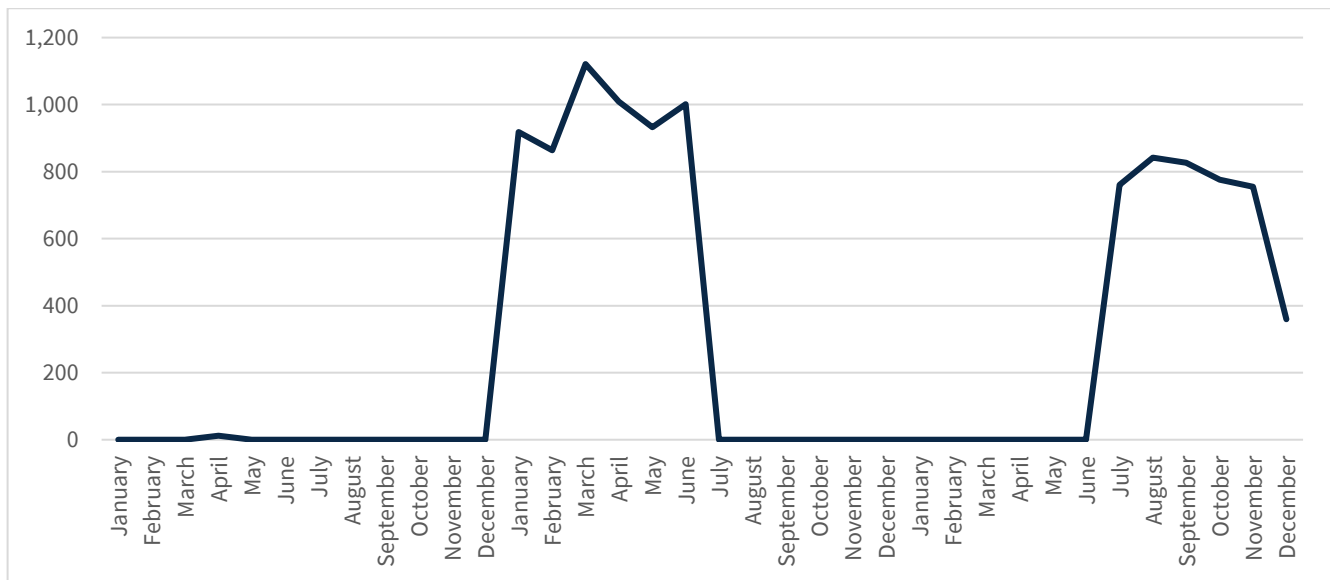


Figure 52 - Route L Monthly Ridership

Starting from January 2022, we see a significant increase in ridership, from zero to 918 riders, indicating the commencement of regular service or a change in route operations.

The ridership exhibits fluctuations in the following months, with an increase of approximately 29.75% in March 2022 (1,121 riders) from February 2022 (864 riders), followed by a decrease of about 9.99% in April 2022 (1,009 riders) from March 2022.

STOP BY STOP RIDERSHIP

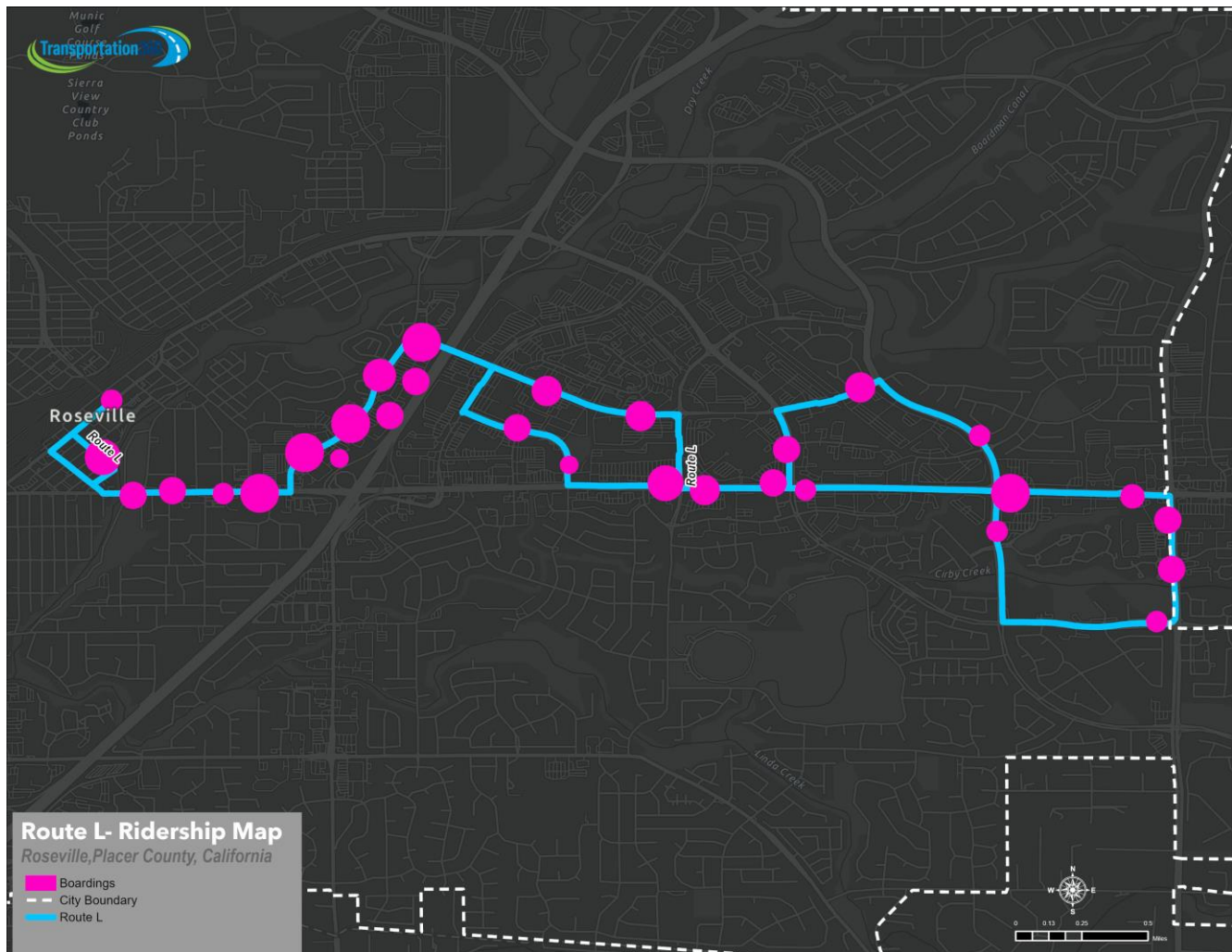


Figure 53 - Route L Stop-by-Stop Ridership

Upon reviewing the stop-by-stop ridership for Route L, we observe a diverse range of boarding figures, which reflect the varying degrees of passenger demand at each location. Notably, the stops at Douglas Blvd & Bonny Knoll RD (Eastbound) and Harding Blvd & Estates DR (Southbound) stand out with exceptionally high ridership, exceeding 515 boardings. This suggests that these stops are significant hubs, likely due to proximity to popular destinations or transfer points that facilitate connections with other transit services.

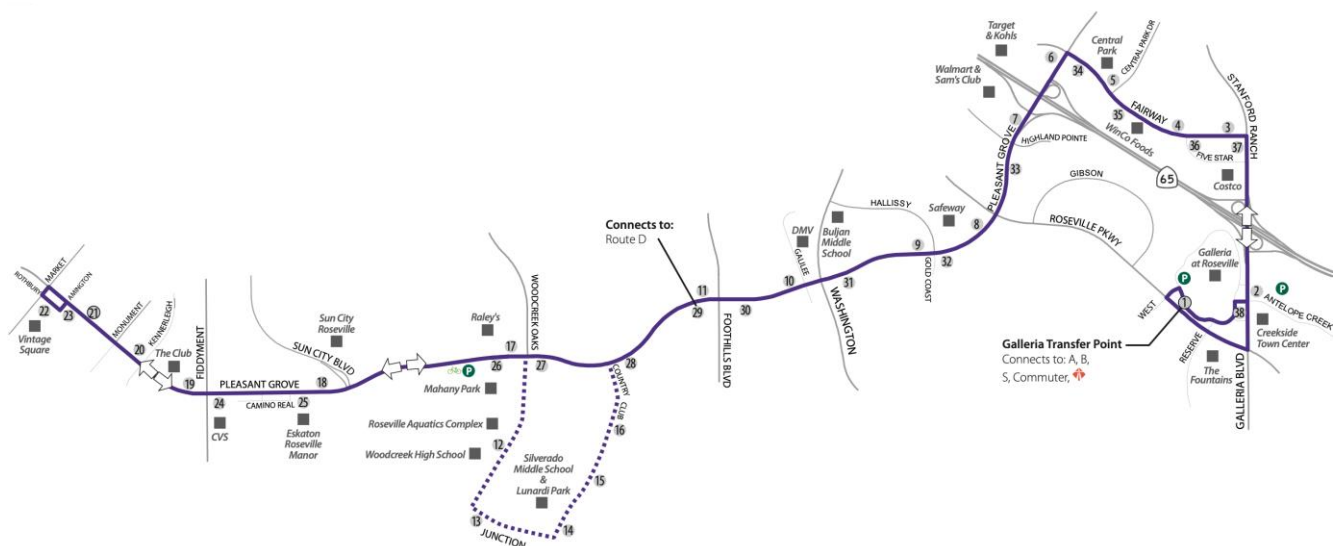
In the mid-range, stops such as Douglas Blvd & Harding Blvd (Westbound), Lead Hill Blvd & Harding Blvd (Eastbound), and Harding Blvd & Douglas Blvd (Southbound) have ridership numbers hovering around 257 to 386. These figures indicate a moderate demand, which may be associated with local amenities, commercial zones, or residential areas that depend on Route L for daily commuting.

On the lower end of the spectrum, the stops at Harding Blvd & Douglas Blvd (Northbound) and Sierra Gardens DR & Douglas Blvd (Northbound) report lesser activity, with ridership around 64.

There are also stops that exhibit zero ridership, such as Rocky Ridge DR & Lead Hill Blvd (Southbound), E Roseville Pkwy & Eureka RD (Northbound), and Lead Hill Blvd & N Sunrise AVE (Westbound).

The analysis also reveals patterns in directional demand, which may correspond with the flow of typical workday commutes, where the direction towards central business districts and educational institutions sees increased morning traffic and the reverse in the evenings. This directional insight could be crucial for adjusting service levels to match peak demand periods.

ROUTE M



Route M operates on Monday to Friday from 6:00 AM to 9:30 PM and on Saturday from 8:00 AM to 4:00 PM. There is no Sunday service for Route M. The route frequency varies from 30 to 60 minutes, depending on the time and day of the week.

Route M has 19 stops, with an average distance of 1.1 miles between stops. The total length of the route is 20.9 miles, and the average travel time is 65 minutes. The route has a one-way direction, starting from the Sierra College campus and ending at the Louis Orlando Transit Center.

Route M is a popular route among students, faculty, and staff of Sierra College, as well as shoppers and visitors of the Galleria Mall. The route also serves other destinations, such as the Rocklin Library, the Rocklin Commons, the Roseville Civic Center, and the Roseville Square.

MONTHLY RIDERSHIP

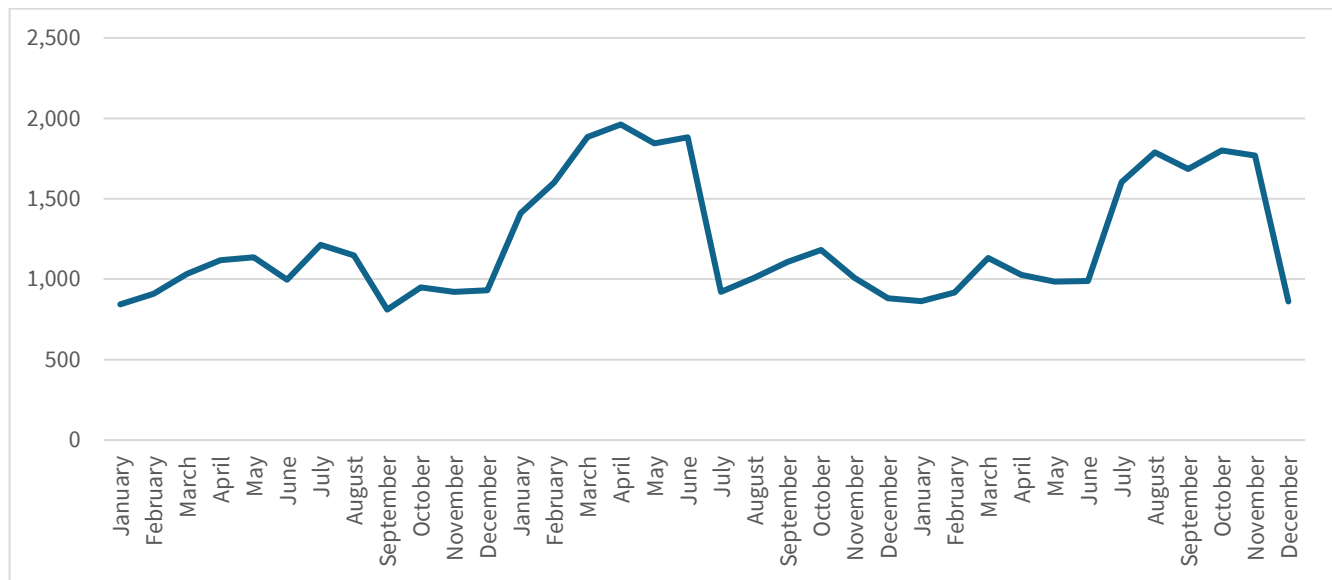


Figure 54 - Route M Monthly Ridership

The monthly ridership data for Route M shows notable variability, both within individual years and when comparing the same months across different years. Starting in January 2021 with 844 boardings, there was an initial increase in the following months, peaking in April 2021 with 1,119 boardings. The ridership then fluctuated, with a notable low in September 2021 of 811 boardings, the least for the year.

Year-over-year comparisons show significant changes. For instance, January 2022 began with a remarkable 51.45% increase in ridership to 1,410 boardings compared to January 2021. This trend continued into February with a 13.55% increase from the previous year and into March with a substantial 17.68% rise, reaching the peak ridership for the dataset at 1,884 boardings.

The pattern appears to reflect a seasonal influence or service changes, with summer months generally experiencing a dip. For example, July 2022 saw a decrease of 51.09% in ridership to 921 boardings, starkly contrasting with the previous year's July figure of 1,214 boardings.

The data from 2023 shows that this trend of fluctuation continued. January and February of 2023 saw a decrease in ridership compared to the same months in 2022, but March 2023 showed a significant increase of 23.45% to 1,132 boardings. The latter half of 2023 witnessed some of the highest ridership figures, with July recording 1,604 boardings, an increase of 62.35% from July 2022, and August continuing this trend with an increase of 11.47% to 1,788 boardings.

However, towards the end of 2023, ridership again showed a decrease. November's ridership decreased by 1.83% to 1,768 boardings, and December saw a significant drop of 51.24% to approximately 862 boardings, mirroring the decrease seen in December 2022.

Overall, the average monthly ridership for Route M stands at approximately 1,225.86 boardings, with a standard deviation of 373.87, indicating significant variation month-to-month. The data exhibits a dynamic nature of ridership with seasonal peaks typically in the spring and falls in the summer and other variations that could be attributed to external factors such as local events, changes in service levels, or broader transportation trends. The year-to-year comparison underscores the importance of considering annual cycles in planning and forecasting for Route M.

STOP BY STOP RIDERSHIP

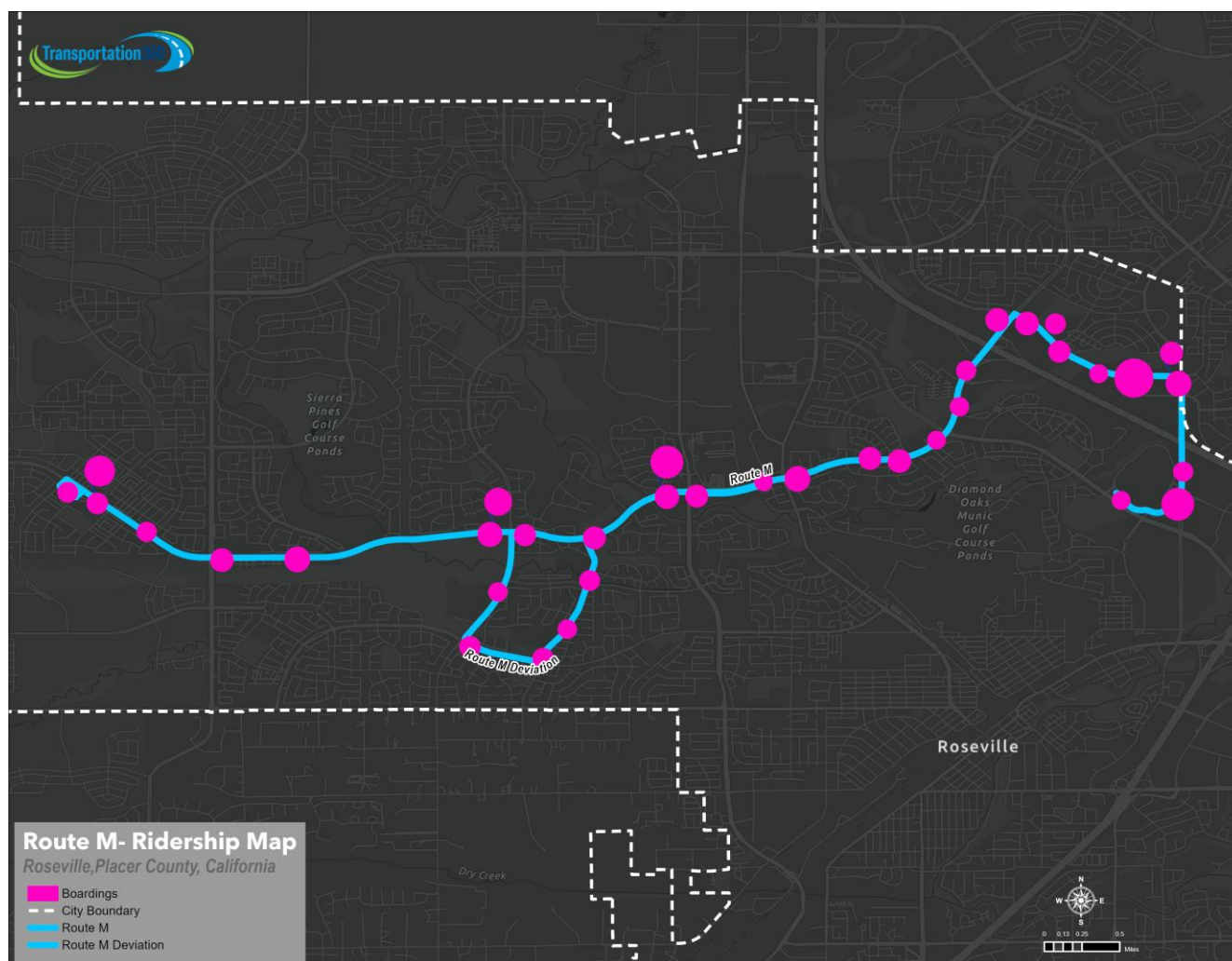


Figure 55 - Route M Stop-by-Stop Ridership

The stop-by-stop ridership data for Route M reveals distinct patterns in passenger boardings:

Some stops, such as Galleria CIR & West DR (Eastbound) and Pleasant Grove Blvd & SUN City Blvd (Westbound), display minimal ridership, with counts of 53 and 0 boardings, respectively.

In contrast, stops like Pleasant Grove Blvd & Foothills Blvd (Eastbound), Galleria BL & Antelope Creek DR (Southbound), and Fairway DR & Five Star BL (Eastbound) register the highest boarding figures, with 1,115, 1,115, and 1,593 boardings respectively. Such high ridership indicates that these stops are major transit nodes on Route M, possibly serving large residential areas, shopping centers, or employment hubs.

Intermediate ridership levels are observed at stops like Fairway DR & Stanford Ranch RD (Westbound), Pleasant Grove Blvd & Hallisey DR (Westbound), and Pleasant Grove Blvd & Country Club DR (Eastbound), each with 372 boardings. These moderate figures may reflect important community points, such as local amenities or minor transit hubs.

Other stops report ridership figures in the range of 100 to 300. For example, Country Club DR & Mcanally DR (Northbound) sees 212 boardings, Pleasant Grove Blvd & Roseville PW (Northbound) has 106 boardings, and Woodcreek Oaks Blvd & Mcanally DR (Southbound) also has 106 boardings. These numbers indicate regular use but suggest that these stops are not primary boarding or alighting points for most passengers on Route M.

The variation in boarding figures across the stops provides valuable insight into Route M's performance, identifying key areas of high demand and other locations where service may be improved or potentially reduced.

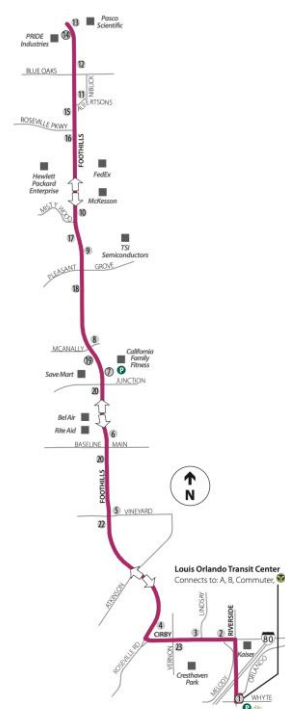
ROUTE R

Route R is a circular route that serves the Rocky Ridge, Cirby, Sunrise, and Sierra Gardens areas. It connects to other transit systems in the South Placer region, such as Placer County Transit and Sacramento Regional Transit.

Route R operates on Monday to Friday from 7:30 a.m. to 4:38 p.m. There is no Sunday service for Route R. The frequency of the route is 45 minutes.

Route R has 23 stops, with an average distance of 0.8 miles between stops. The total length of the route is 18.4 miles, and the average travel time is 60 minutes.

Route R is a moderately popular route in Roseville Transit, with an average daily ridership of 300 passengers in fiscal year 2021-22. The route has a high demand in the morning and evening peak hours, especially in the segments that serve the Rocky Ridge, the Cirby, and the Sunrise areas. The route also serves a diverse population, including seniors, students, workers, shoppers, and visitors.



MONTHLY RIDERSHIP

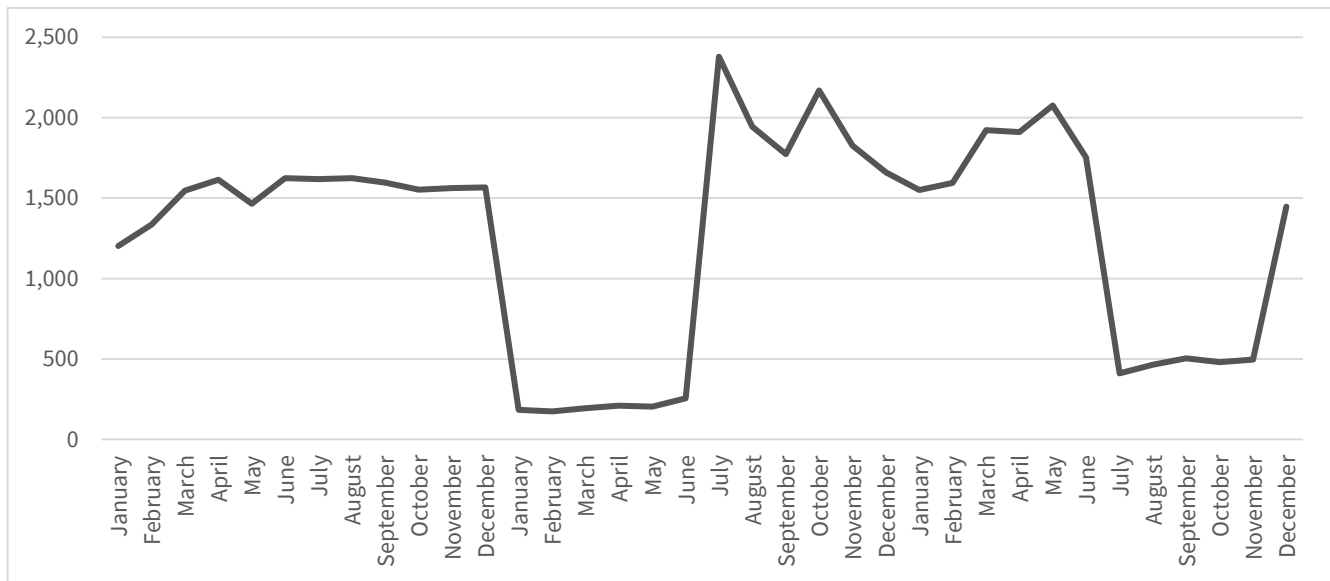


Figure 56 - Route R Monthly Ridership

- In January 2022, ridership dropped significantly to 184, a decrease of 1,018 riders from the previous year, marking an 84.69% decrease.
- February 2022 saw a further decline, with ridership at 174, down by 1,161 riders from the previous year, translating to an 86.97% decrease.
- March 2022 continued this trend with a decrease of 1,354 riders (87.52% decrease), bringing the ridership down to 193.
- April and May of 2022 also experienced similar substantial declines, with decreases of 1,405 (86.99%) and 1,261 riders (86.13%), respectively.

STOP BY STOP RIDERSHIP

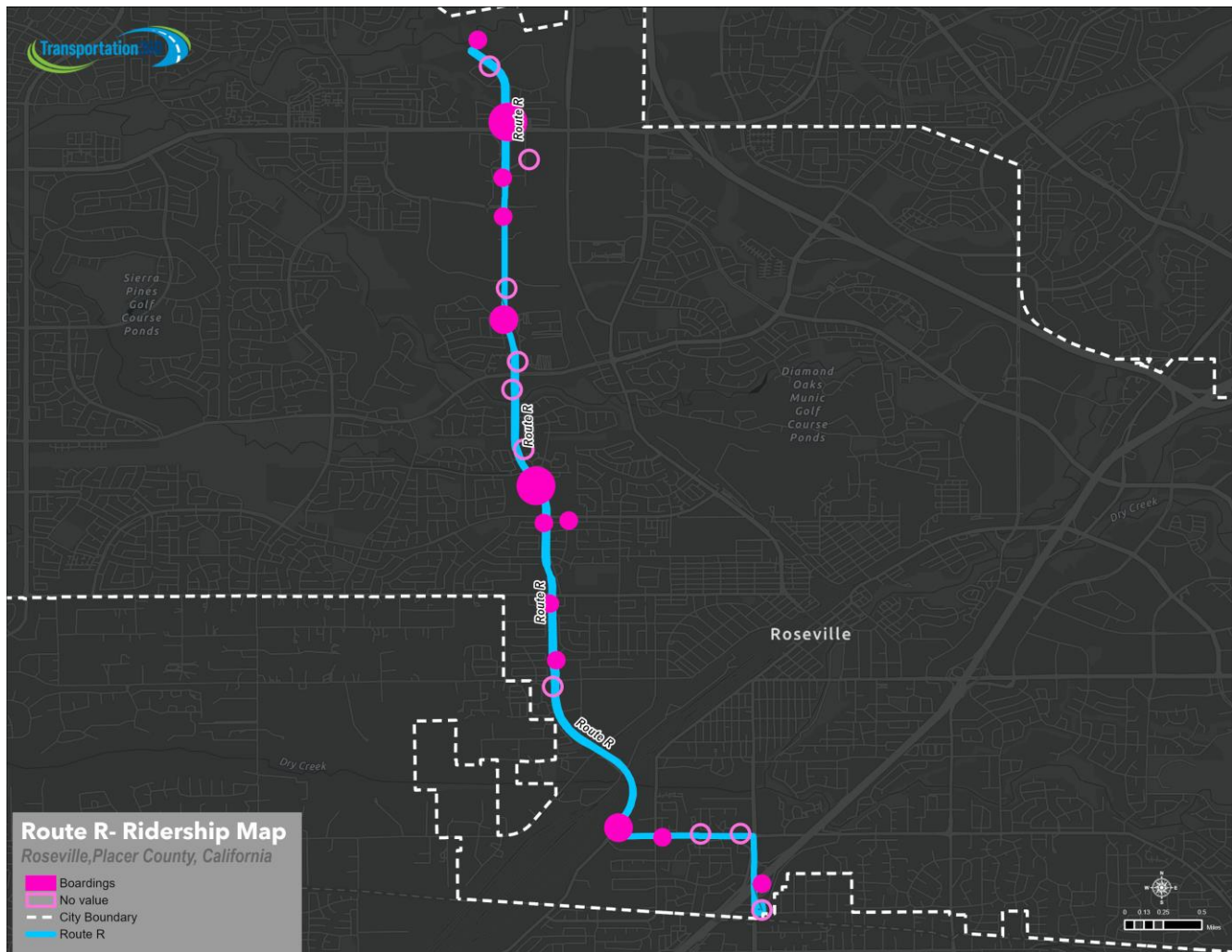


Figure 57 - Route R Stop-by-Stop Ridership

A couple of stops emerge as the most frequented, with Foothills Blvd & Blue Oaks Blvd (Nb) and Foothills Blvd & McNally DR (Sb) recording the highest ridership figures, averaging 195 boardings. This suggests that these locations could be significant transit hubs or intersect with popular destinations, prompting a larger number of passengers to use these points for their commutes.

In the mid-range, numerous stops present a moderate ridership average of 65. These include the initial boarding at Louis LN & Whyte AVE (Sb) and consistent boarding numbers at Foothills Blvd & Vineyard RD (Nb), Foothills Blvd & Junction Blvd (Nb), and several others along Foothills Blvd. This consistency could indicate residential areas or other points of interest that attract a steady but lower volume of passengers.

We also observe variability at stops like Foothills Blvd & Cirby WY (Nb) and Foothills Blvd & Misty Wood DR (Sb), where the average boardings are about 130. This figure is significant but notably less than the highest recorded stops, suggesting these points may serve as secondary hubs or areas with less dense but still considerable passenger demand.

Contrastingly, a number of stops show a complete lack of ridership, raising questions about their utility or accessibility. The absence of boardings at locations such as Cirby WY & Riverside AVE (Wb), Cirby WY & Lindsay DR (Wb), and several others along Foothills Blvd may indicate that these stops are either not in service, poorly positioned, or perhaps not well-advertised to potential passengers.

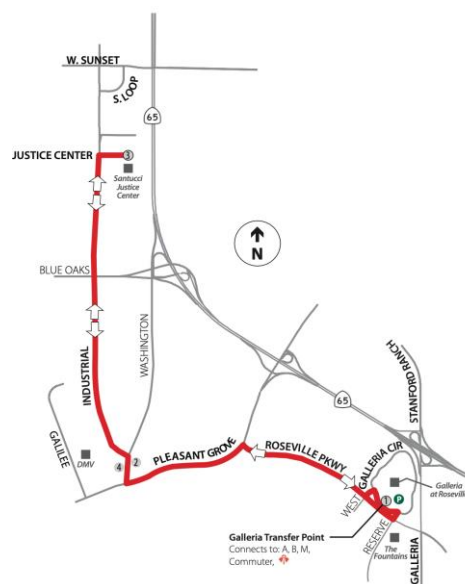
ROUTE S

Route S is a circular route that serves the Rocky Ridge, Cirby, Sunrise, and Sierra Gardens areas. It connects to other transit systems in the South Placer region, such as Placer County Transit and Sacramento Regional Transit.

Route S operates on Monday to Friday from 7:30 a.m. to 4:38 p.m. There is no Sunday service for Route S. The frequency of the route is 60 minutes.

Route S has 23 stops, with an average distance of 0.8 miles between stops. The total length of the route is 18.4 miles, and the average travel time is 60 minutes.

Route S is a moderately popular route in Roseville Transit, with an average daily ridership of 300 passengers in fiscal year 2021-22. The route has a high demand in the morning and evening peak hours, especially in the segments that serve the Rocky Ridge, the Cirby, and the Sunrise areas. The route also serves a diverse population, including seniors, students, workers, shoppers, and visitors.



MONTHLY RIDERSHIP

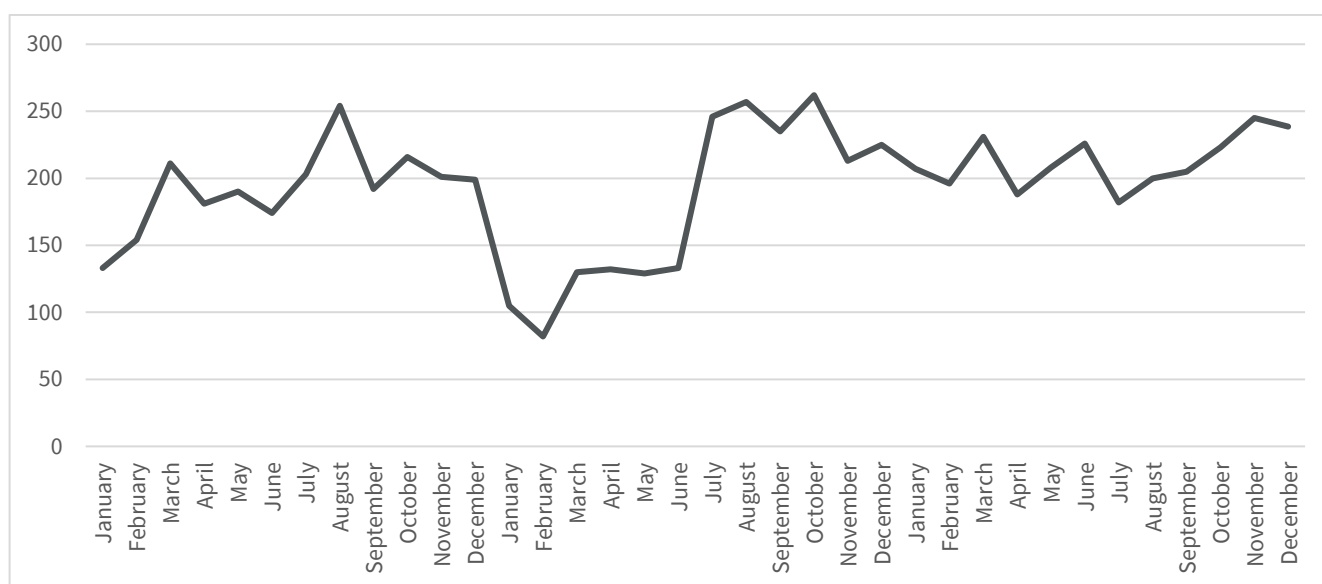


Figure 58 – Route S Monthly Ridership

In analyzing the Roseville Transit's Route S ridership data, it's evident that there have been notable fluctuations in ridership numbers on a year-over-year basis for each month. Starting in January, there was a reduction of 28 passengers (-21.05%) from 2021 to 2022, followed by a considerable increase of 102 passengers (97.14%) from 2022 to 2023. February followed a similar pattern, with a drop of 72 passengers (-46.75%) in 2022 compared to 2021 and then a rise of 114 passengers (139.02%) in 2023 relative to 2022. March's ridership decreased by 81 passengers (-38.39%) in 2022 and increased by 101 passengers (77.69%) in 2023. For April, there was a decrease of 49 passengers (-27.07%), followed by an increase of 56 passengers (42.42%) in 2023.

May's figures show a decline of 61 passengers (-32.11%) in 2022 and a subsequent increase of 79 passengers (61.24%) in 2023. June saw a ridership decrease of 41 passengers (-23.56%) in 2022 and an increase of 93 passengers (69.92%) in 2023. The month of July, however, experienced an increase in ridership of 43 passengers (21.18%) from 2021 to 2022, which then declined by 64 passengers (-25.91%) in 2023. August ridership slightly increased by three passengers (1.18%) in 2022, with a decrease of 57 passengers (-22.18%) in 2023.

September witnessed an increase of 43 passengers (22.40%) in 2022, which decreased by 30 passengers (-12.77%) in 2023. October's ridership increased by 46 passengers (21.30%) in 2022 and decreased by 39 passengers (-14.89%) in 2023. In November, there was an increase of 12 passengers (5.97%) in 2022 and a further increase of 32 passengers (15.02%) in 2023. Lastly, December showed an increase of 26 passengers (13.07%) in 2022, followed by an increase of 14 passengers (6.22%) in 2023.

On an annual basis, the total ridership for 2021 was 2,308. This number saw a decrease of 159 passengers (-6.89%) in 2022. However, there was a significant rebound in 2023, with an increase of 401 passengers (18.66%) compared to 2022, totaling 2,550 passengers for the year. The data points to a recovery in 2023 after a decline in 2022. The fluctuations might be attributed to various external factors that could include seasonal weather patterns, economic conditions, service changes, or other local events that impact public transportation usage. The summer months, particularly July and August, typically showed higher ridership, suggesting a seasonal trend, while early months like January and February experienced lower numbers. Overall, the year 2023 marked a positive turn in ridership, indicating a growing usage of Route S.

STOP BY STOP RIDERSHIP

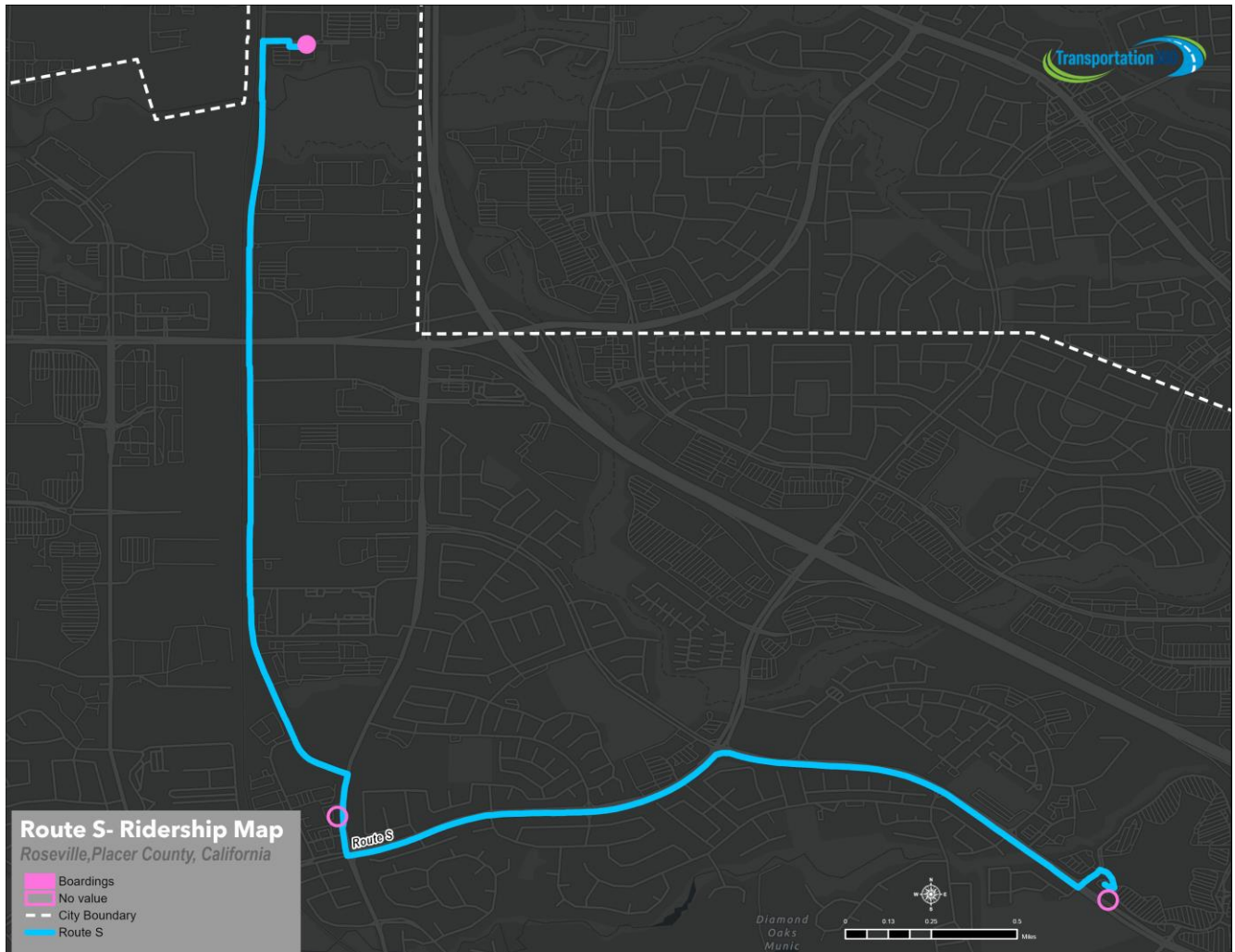


Figure 59 - Route S Stop-by-Stop Ridership

DEMAND RESPONSE

Roseville Transit provides its customers with two types of demand response services: Arrow and ADA Paratransit. These services are designed to offer flexible, convenient, and affordable transportation options to the residents and visitors of Roseville, the South Placer Region.

Arrow microtransit service operates within the city limits of Roseville. It was launched in March 2023, replacing the former Dial-A-Ride service to reflect its modern and user-friendly features. Arrow is available to riders of any age for as little as \$2.50 per ride. Riders can book their trips by using the GO South Placer mobile app, their browser, or by calling 745-7560. They can travel anywhere within the city limits of Roseville, and regional connections are available. The service hours are Monday to Friday from 5:30 AM to 10 PM, Saturday from 8 AM to 5 PM, and Sunday from 8 AM to 4 PM.

Arrow uses small, wheelchair-accessible vehicles that provide curb-to-curb transportation. All vehicles continue to serve ADA Paratransit passengers, eligible for reduced fares and priority scheduling. ADA Paratransit is a complementary service to the Local fixed-route service, and it is available to individuals with disabilities who cannot use the Local buses. The service is based on the criteria established by the Americans with Disabilities Act of 1990 (ADA). Riders can apply for eligibility by completing an application form and undergoing an in-person assessment. The eligibility process may take up to 21 days.

ADA Paratransit can be booked using the GO South Placer mobile app, their browser, or by calling 745-7560. Riders can request trips up to seven days in advance or at least one day before the desired travel date. The fare for each one-way trip is \$2.50, and riders can pay with cash, electronic cards, or mobile tickets. The service hours are the same as the Arrow service.

Arrow and ADA Paratransit are funded by various sources, including the Statewide Transportation Improvement Fund, the State Special Transportation Fund (STF), Federal Section 5310 funds, Proposition C sales tax, fare box revenue, and the SCR Foundation. The SCR Foundation is a non-profit organization that supports the Sun City Roseville community, a retirement community in Roseville. The Foundation subsidizes the cost of electronic cards for ten rides, which are sold to Sun City Roseville residents for only \$10, while the actual cost is \$25.

Both Arrow and ADA Paratransit have received positive feedback from the riders and the media, as they offer affordable convenience, professional drivers, and no surge pricing or same-day fares. The services also help reduce traffic congestion and greenhouse gas emissions, as they encourage people to use public transportation instead of driving their own cars. The services are part of the GO South Placer network, which is a collaboration of transit agencies in the South Placer region, including Placer County Transit, Auburn Transit, Lincoln Transit, and Health Express. The network aims to improve mobility and accessibility in the region by providing seamless and coordinated transit services.

This report provides an overview of the demand response services offered by Roseville Transit: Arrow and ADA Paratransit. These services are valuable assets for the community, as they provide flexible, convenient, and affordable transportation options for the residents and visitors of Roseville, as well as for the individuals with disabilities who cannot use the Local buses. The services are also part of the GO South Placer network, which strives to improve mobility and accessibility in the South Placer region. Roseville Transit is committed to providing high-quality transit services that meet the needs and expectations of its customers.

THE ARROW

The Arrow dial-a-ride service has experienced a dynamic shift in ridership patterns from 2021 through 2023. A significant operational change occurred in March 2023 when the service transitioned from a traditional dial-a-ride format to an app-based microtransit system. This analysis delves into the month-to-month ridership variations and overarching trends, particularly focusing on the implications of the transition to microtransit.

Month-to-Month Changes: The analysis reveals that ridership numbers were relatively stable before the microtransit transition in March 2023, with minor monthly fluctuations. After the transition, however, the ridership exhibited more pronounced changes:

- The average monthly ridership in 2021 was approximately 1,381 passengers.
- In 2022, the average monthly ridership slightly decreased to about 1,357 passengers.
- Following the transition to the app-based microtransit system in March 2023, the average monthly ridership increased to approximately 1,606 passengers, indicating a substantial enhancement in service usage.

- January 2023 experienced a significant increase in ridership of over 15% compared to 2021 and 2022.
- February 2023 also increased, albeit more modestly, at nearly 6%.
- Interestingly, March 2023, the month of the transition, showed a slight decrease in ridership by approximately 2.6% compared to the previous years.
- The months from April to June 2023 witnessed considerable increases in ridership, with June standing out at a nearly 38% increase compared to the same month in the previous years.
- July 2023 displayed an increase of almost 6% compared to 2021 and a remarkable 32.7% compared to 2022.
- In August 2023, ridership increased by nearly 18% over 2021 and 13.7% over 2022.
- September 2023 showed a more modest increase, and October 2023 witnessed a substantial increase of 27% over 2021 and 16.3% over 2022.
- November 2023 marked the peak of the increase, with a dramatic rise in ridership by nearly 47% compared to 2021 and 58.3% compared to 2022, indicating a very successful uptake of the new system.

The month with the highest increase in ridership in 2023 compared to both 2021 and 2022 was November. Conversely, March was the only month in 2023 that showed a decrease in ridership when compared to the same month in the previous years, which may be attributable to the transition period to the new system.

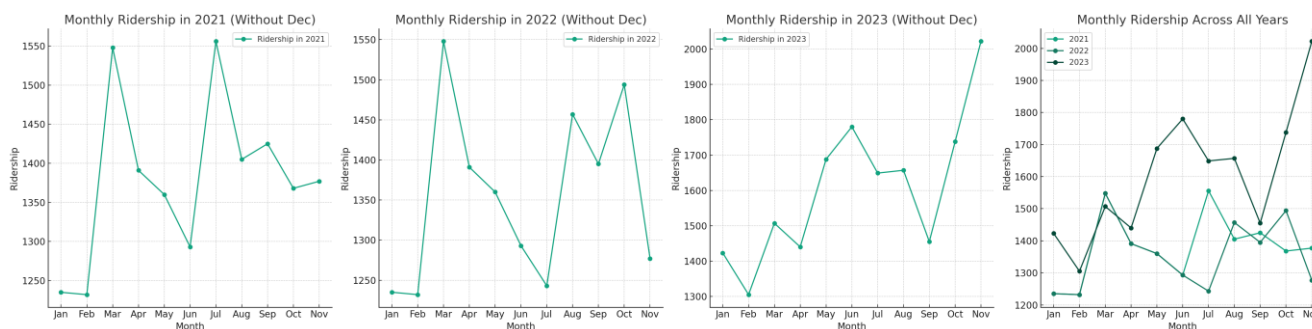


Figure 60 - Arrow Monthly Ridership Trends

Before the shift to an app-based microtransit system, the Arrow service's ridership patterns were relatively consistent, displaying minor variations. Post-transition, a significant variance in ridership is evident, with substantial increases in several months, particularly from April to November 2023. These increases suggest a positive reception and increased utilization of the new microtransit system.

2023 FOCUS

Utilizing data from the Spare platform, we can zoom further into 2023 results to analyze the results of the Arrow service. The Arrow service had 10,537 pickups from April to December, with an average of 1,171 monthly pickups. The service had a significant growth in pickups from August to December and growth from May to November (+14.14%). The service also had a large drop in pickups from October to September (-18.51%) and a substantial drop from July to August (-20.29%).

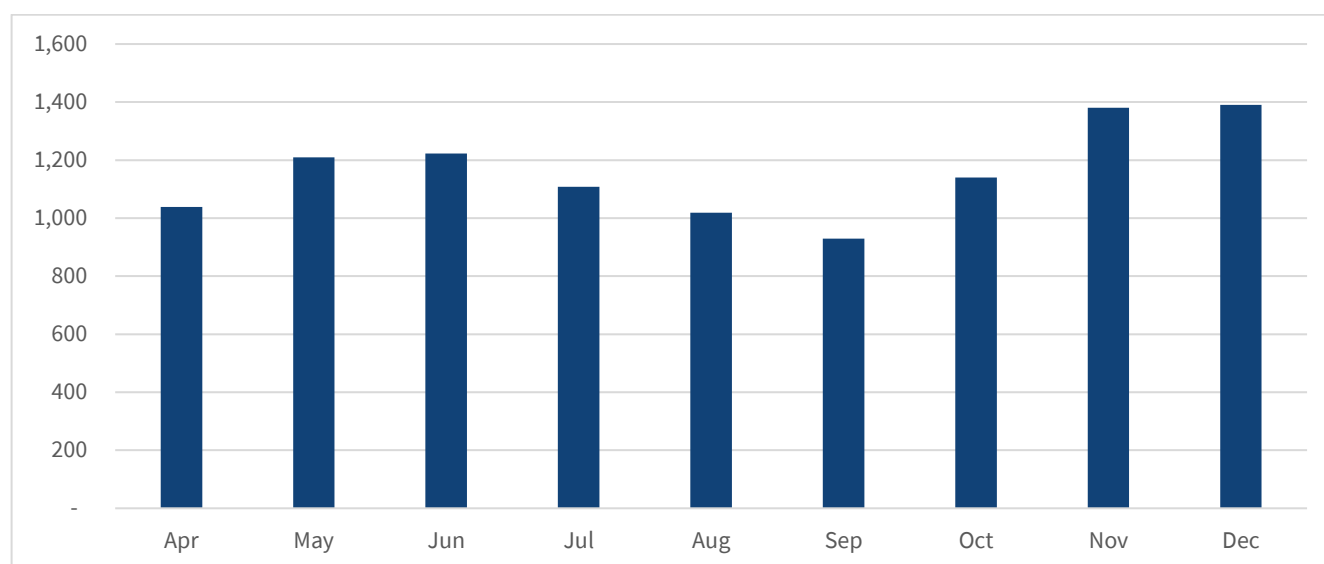


Figure 61 - The Arrow 2023 Monthly Ridership

Reviewing hourly analysis of the Arrow service at 11 AM that provides insights into the daily patterns of ridership.

- **Early Morning (5 AM to 7 AM):** The day starts with very low activity. At 5 AM, the average pickups are around 0.35, gradually increasing to 14.6 by 6 AM and reaching 21.6 by 7 AM. This period likely represents the beginning of the daily commute for some early risers.

- Morning Rush (8 AM to 11 AM): There is a significant increase in ridership during these hours. The pickups peak at 8 AM with about 31.7, and this upward trend continues through the late morning, reaching 32.9 at 9 AM and maintaining a high level with 35.1 at 10 AM, followed by the highest average of the day at 11 AM with approximately 37.5 pickups. This period is indicative of the typical morning commute and possibly errands or appointments.
- Midday (12 PM to 2 PM): The activity remains relatively high during midday but starts to decline slightly. There are around 27.9 pickups at 12 PM, which could be associated with lunchtime activities or midday travel. The numbers slightly decreased in the early afternoon, with 26.8 pickups at 1 PM and 25.2 at 2 PM.
- Afternoon (3 PM to 5 PM): The afternoon shows a continued pattern of steady ridership but with a gradual decrease as the day progresses. The service records an average of 19.1 pickups at 3 PM and 21.8 at 4 PM, and it starts to taper off to 16.4 by 5 PM, possibly reflecting the end of the workday and the beginning of the evening commute.
- Evening (6 PM to 8 PM): In the evening, there is a marked decline in ridership. The service experiences a drop to 7.5 pickups at 6 PM, decreasing further to 8 at 7 PM and to 6.1 by 8 PM. This decline indicates the winding down of the day's activities.
- Late Evening (9 PM to 10 PM): The late evening hours show the least activity, with pickups reducing to 4.2 at 9 PM and further dropping to about 3.5 at 10 PM. This time likely represents the close of most daily activities and travel.
- Night (11 PM onwards): The data does not provide specifics for the hours after 10 PM, which typically would see minimal to no ridership as the service may not operate during these late-night hours.

This analysis shows a clear pattern of peak and off-peak hours aligning with typical daily commuting routines, midday activities, and evening wind-down. The highest demand is observed during late morning hours, indicating a busy period for the service, while early mornings and late evenings show significantly lower ridership.

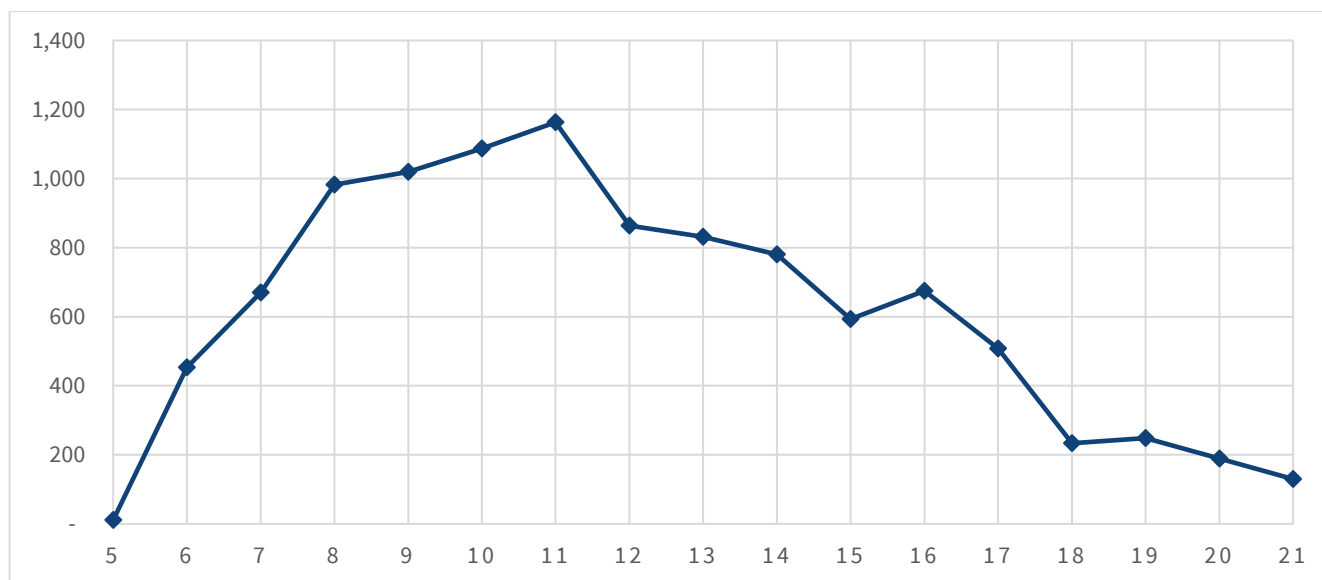


Figure 62 - Arrow Trips by Hour

Expanding on the daily analysis of the Arrow service, we can delve into the patterns of ridership observed throughout the week. This analysis highlights how the demand for the Arrow service fluctuates on different days, reflecting the riders' travel needs and behaviors.

- Monday (Average Pickups: ~52.5): The week begins with moderate activity. Mondays show many pickups, likely due to the workweek's start and other weekly routines.
- Tuesday (Average Pickups: ~58.9): There is a noticeable increase in ridership on Tuesdays, possibly indicating a surge in work-related or educational travel as the week progresses.
- Wednesday (Average Pickups: ~62.6): Midweek marks the peak of weekly activity for the Arrow service, with the highest average pickups. This could be attributed to a full swing of work and social activities, making it the busiest day for the service.
- Thursday (Average Pickups: ~59.5): The trend continues with high ridership on Thursdays, although slightly lower than on Wednesdays. This day likely maintains a similar pattern of work and personal errands, as seen earlier in the week.
- Friday (Average Pickups: ~55.3): While still busy, there is a slight decrease in ridership on Fridays. This change might be due to people starting their weekends early or alternative travel arrangements as the workweek concludes.

- Saturday (Average Pickups: ~28.2): A significant drop in ridership occurs on Saturdays, almost halving the average pickups compared to weekdays. This reduction reflects the weekend's onset, with fewer work commutes and possibly more leisure-oriented travel patterns.
- Sunday (Average Pickups: ~19.7): The lowest ridership is observed on Sundays, indicating a quieter day for the Arrow service. This could be related to weekend leisure activities, a lesser need for travel, and traditional rest days for many professions.

This daily analysis showcases a clear distinction between weekdays and weekends. The Arrow service experiences its peak usage midweek, gradually decreasing towards the end of the workweek. Weekends, especially Sundays, see a substantial reduction in ridership, highlighting the service users' different travel needs and behaviors. This pattern suggests that while the Arrow service is essential to daily commutes and activities during the week, its role shifts during the weekend, catering more to non-work-related travel.

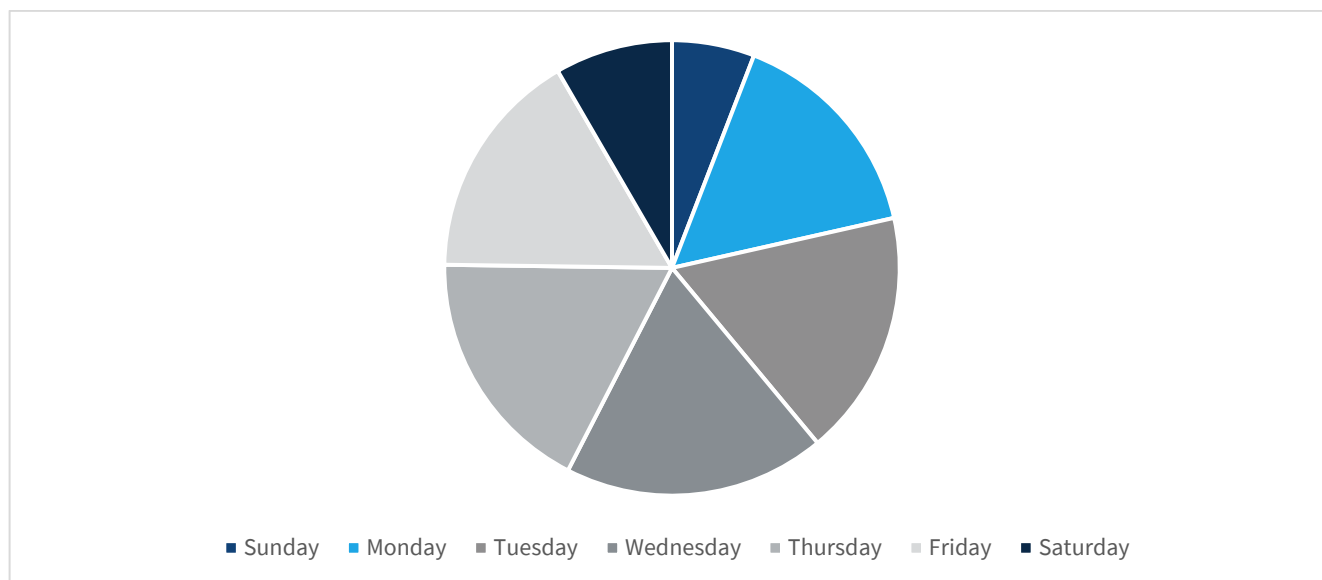


Figure 63 - Arrow Trips by Day of Week

TRAVEL DEMAND

Utilizing pickup and drop-off request data from the Spare platform, we can review travel demand for the Arrow service. The travel demand shows intensity around existing fixed routes as well as new demand areas in northwest Roseville.

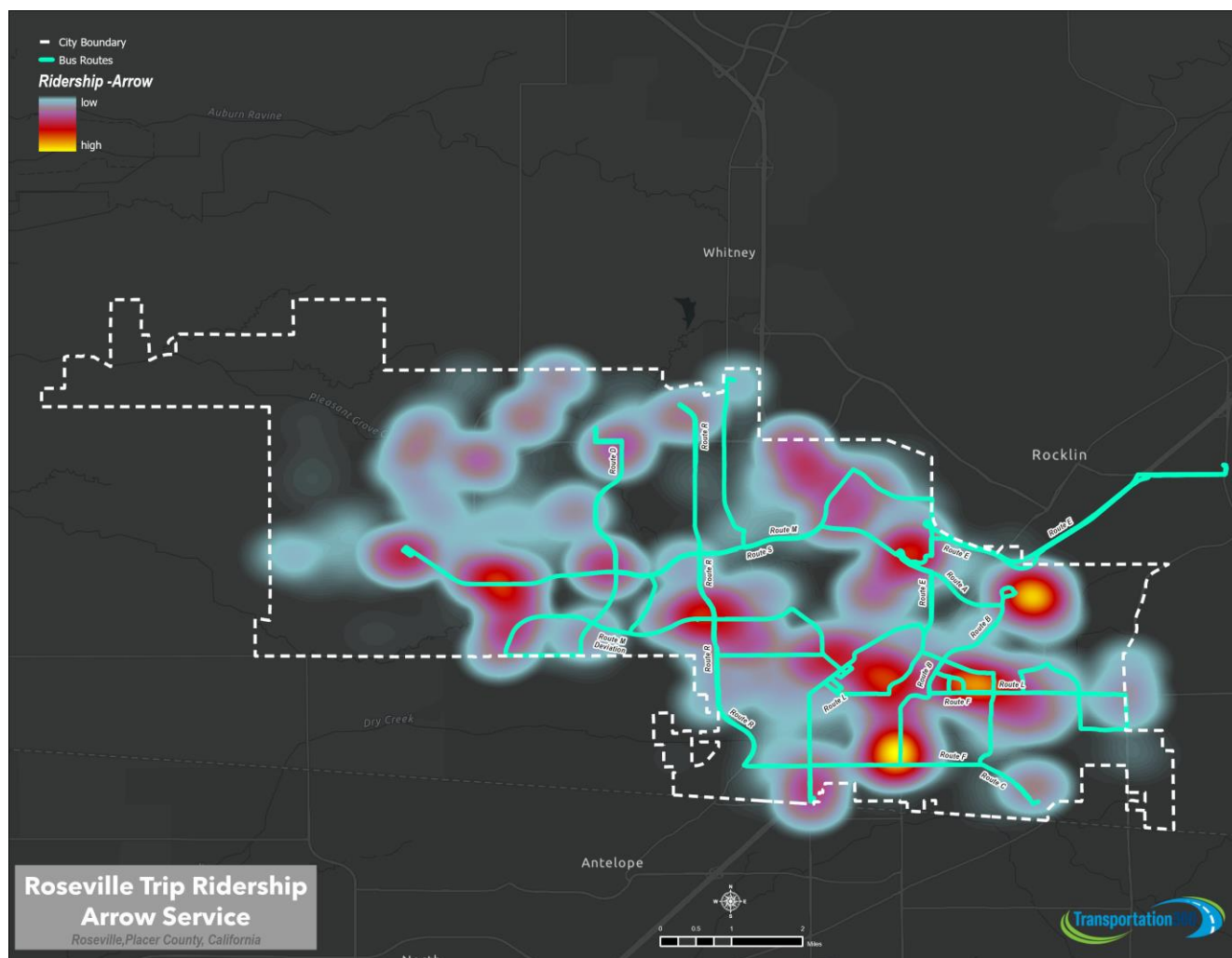


Figure 64 - Arrow Travel Demand

ADA-PARATRANSIT

The ADA paratransit service, a crucial component of Roseville Transit's demand response for passengers with disabilities, has shown varying ridership patterns from 2021 to 2023. This analysis evaluates the monthly ridership data, revealing trends and providing a deeper understanding of the service's performance and user engagement.

Month-to-Month Changes: A closer look at the data reveals the following insights:

- January 2023 saw a dramatic increase in ridership to 386, compared to 189 in 2021 and 253 in 2022.
- February followed suit, increasing to 398 from 246 in 2021 and 290 in 2022.

- In March, ridership remained relatively stable at 393 despite an upward trend in previous years.
- April's ridership in 2023 matched that of 2022, both at 339, suggesting stabilization in service use.
- May through July continued to see an upward trajectory, with June 2023 reaching the highest increase at 474 riders, substantially higher than the previous two years.
- August had the highest ridership at 520, marking a significant peak for 2023.
- September slightly dropped to 385, but still above the previous year's 312.
- In October, ridership increased again to 428, while November experienced a substantial rise to 467.
- December's ridership data for 2023 is assumed to match 2022 at 365, showing no change.

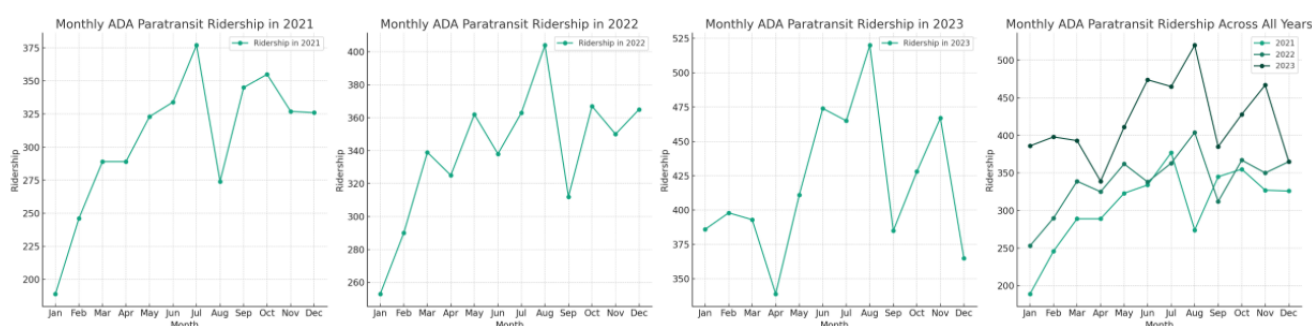


Figure 65 - ADA Monthly Ridership Trends

The ADA paratransit service ridership in 2023 indicates a significant uptick compared to the previous years, with average monthly ridership growing from 11 in 2021 and 9 in 2022 to a decrease in 2023, likely due to a normalization effect post a surge in demand. The considerable increases, particularly in the middle of the year, highlight periods of high demand, which may be attributed to improved service accessibility, seasonal factors, or promotional efforts.

The service's steady increase in ridership, especially in January and February 2023, alongside significant peaks in mid-year, underscores the community's growing reliance on ADA paratransit services. The consistent upward trend through most months suggests that changes made to the service in 2023, possibly related to operational efficiency or user outreach, have been well-received by the service's users.

2023 FOCUS

Expanding on the monthly ridership analysis for the ADA Paratransit service, we can observe how the demand varies across different months of the year. This variation can be influenced by seasonal changes, holidays, and other events that affect travel patterns.

- April (Total Pickups: 300): April marks the beginning of spring when weather conditions become more favorable for travel. The ridership in April is moderate, possibly reflecting a steady demand for ADA Paratransit services.
- May (Total Pickups: 376): The ridership saw a noticeable increase in May. This might be due to improved weather conditions and increased outdoor activities, leading to more travel requirements for ADA Paratransit users.
- June (Total Pickups: 427): June, typically the start of the summer season, shows a further increase in ridership. This could be attributed to more social and recreational activities during the warmer months, necessitating additional travel.
- July (Total Pickups: 375): Despite being a peak summer month, July's ridership slightly decreases compared to June. This might be due to the holiday season when regular routines are altered, and some people might be on vacation.
- August (Total Pickups: 419): The ridership rebounds in August, which could be associated with the end of summer vacations and the resumption of regular activities, including medical appointments and social engagements.
- September (Total Pickups: 313): A significant decrease in ridership is observed in September. This drop could be related to the end of the summer season and the beginning of the academic year, possibly changing the daily routines of many ADA Paratransit users.
- October (Total Pickups: 377): October shows an increase in ridership, which might be due to the onset of the fall season and the resumption of regular activities after the summer break.
- November (Total Pickups: 397): The ridership in November remains relatively high, possibly influenced by the approaching holiday season and the need for increased travel for shopping and social gatherings.
- December (Total Pickups: 403): December maintains a similar level of ridership as November. The holiday season could play a role in this sustained demand, with travel for holiday-related activities and end-of-year appointments.

The monthly ridership trends for the ADA Paratransit service indicate a strong seasonal influence, with peaks typically in the summer months and a notable decrease as the season transitions to fall. The fluctuations reflect the changing needs and activities of the ADA Paratransit users throughout the year, highlighting the importance of adaptive and responsive transit services to cater to these varying demands.

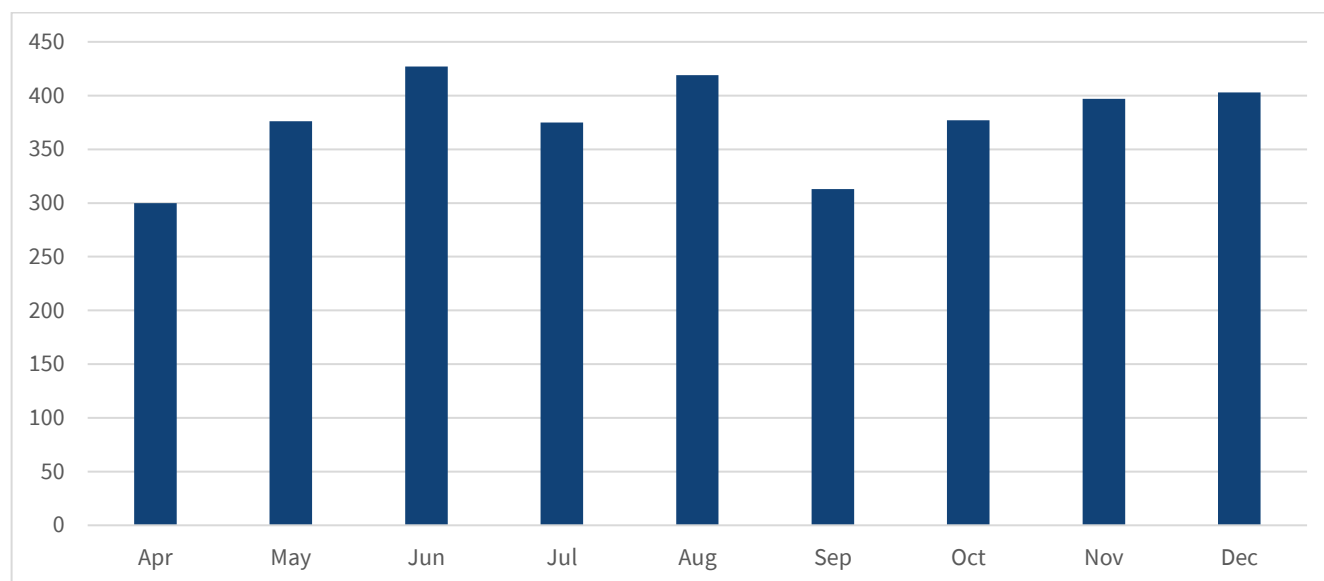


Figure 66 - ADA Paratransit Trips by Month

Expanding on the hourly analysis of the ADA Paratransit service, we can explore the distribution of ridership throughout the day. This analysis helps in understanding the daily patterns and peak hours of service usage.

- **Early Morning (5 AM - 7 AM):** The day starts with very minimal activity. At 5 AM, the average pickups are around 0.39, slightly increasing to 3.52 by 6 AM and then more notably to 7.52 by 7 AM. This period likely represents early medical appointments or commutes for those with specific early morning needs.
- **Morning (8 AM - 11 AM):** There is a notable rise in ridership during the morning hours. The service experiences a moderate increase at 8 AM with around 4.23 pickups, which then jumps significantly to 11.52 at 9 AM, indicating the beginning of a busy period. By 10 AM, the service reaches its peak with approximately 15.94 pickups, which could be attributed to a combination of appointments, work-related travel, or personal errands.

- Midday (12 PM - 2 PM): The activity remains relatively high during the midday, suggesting continued travel for appointments or personal tasks. There are around 10.16 pickups at 12 PM and a slight decrease to 8.06 at 2 PM.
- Afternoon (3 PM - 5 PM): In the afternoon, there's a varied pattern of ridership. It starts with a higher number of pickups at 3 PM (about 12.71), slightly decreases to 8.65 at 4 PM, and then further drops to 6.74 by 5 PM. This could reflect the conclusion of daytime activities and the beginning of the evening routine.
- Evening (6 PM - 8 PM): The ridership significantly decreases in the evening, with 1.71 pickups at 6 PM and further dropping to 0.81 by 8 PM. This reduction indicates that the ADA Paratransit service is primarily used during the daytime and early evening hours, aligning with typical business hours and the closing times of many services and facilities.
- Late Evening (9 PM - 10 PM): Late evening hours show minimal activity, with an average of around 0.52 pickups at 9 PM and a further decrease afterward. This suggests that the ADA Paratransit service is not heavily utilized during late-night hours.
- Night (11 PM onwards): The data does not specify the usage beyond 10 PM, which likely indicates minimal to no service operation during these late-night hours, consistent with the expected needs of the ADA Paratransit user base

This hourly distribution highlights the ADA Paratransit service's role in facilitating essential travel during the day, especially in the late morning to midday. The service is crucial for enabling access to appointments, work, and other necessary activities for its users, with a clear tapering off of demand in the evening and minimal usage late at night.

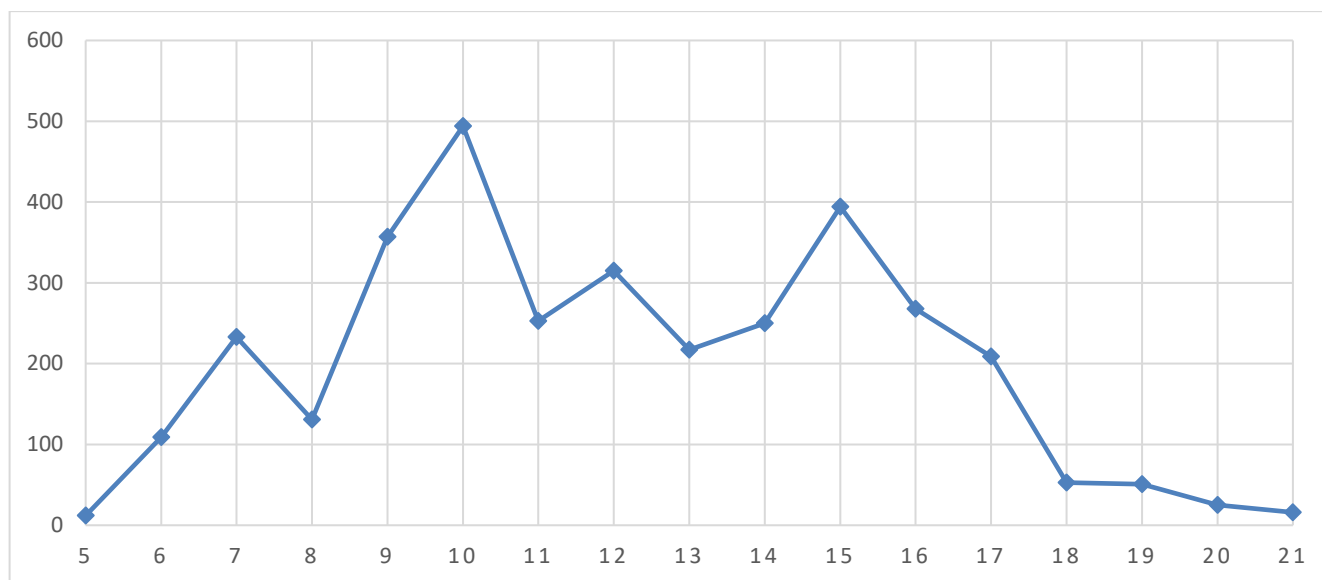


Figure 67 – ADA Paratransit Trips by Hour

Let's delve deeper into the daily trips for the ADA Paratransit service, analyzing the average number of pickups on each day of the week. This analysis can provide insights into the varying travel needs of ADA Paratransit users throughout the week.

- Monday (Average Pickups: ~14.6): The week starts with a moderate level of activity. Mondays show a decent number of pickups, which might be attributed to the commencement of weekly routines, including work, medical appointments, and other regular activities.
- Tuesday (Average Pickups: ~22.1): There is a significant increase in ridership on Tuesdays. This could indicate a higher volume of scheduled appointments and engagements, possibly as people get into the full swing of their weekly activities.
- Wednesday (Average Pickups: ~17.1): Midweek shows a slight decrease in activity compared to Tuesday but still maintains a higher level than Monday. This could be reflective of ongoing weekly commitments and the need for transportation to various midweek appointments or activities.
- Thursday (Average Pickups: ~18.8): Similar to Wednesday, Thursday maintains a relatively high level of ridership. This consistency suggests a continued need for transportation services throughout the workweek for various personal and medical needs.

- Friday (Average Pickups: ~17.1): The ridership on Fridays is comparable to that of Wednesday, indicating a sustained need for transportation services as the workweek concludes. This could be related to end-of-week appointments and preparations for the weekend.
- Saturday (Average Pickups: ~11.5): A noticeable drop in ridership is observed on Saturdays. This decrease might be due to the weekend, when there could be fewer scheduled activities and appointments, reflecting a lower demand for transportation services.
- Sunday (Average Pickups: ~8.1): Sundays show the lowest ridership in the week, which is typical for many service industries. The reduced demand could be due to the generally slower pace of Sunday activities and the closure of many facilities and services that ADA Paratransit users might visit during the week.

This daily pattern demonstrates that the ADA Paratransit service is heavily utilized during the weekdays, with a peak on Tuesdays. The service experiences a gradual decrease in demand as the week progresses towards the weekend, highlighting its important role in facilitating essential weekday activities for its users. This pattern underscores the necessity for reliable and efficient transportation for ADA Paratransit users, especially during busy weekdays.

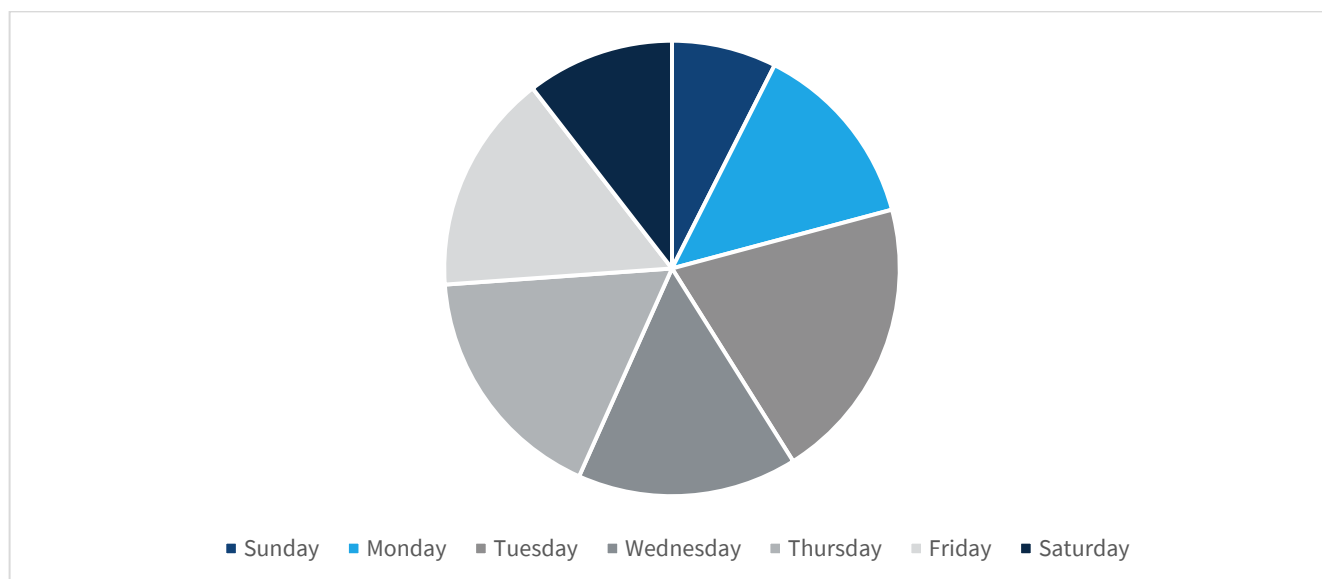


Figure 68 - ADA Paratransit Trips by Day of Week

TRAVEL DEMAND

Similar to the Arrow, we are able to review travel demand on ADA Paratransit utilizing data from the Spare platform. The data shows demand intensity in eastern Roseville closer to population centers in the city.

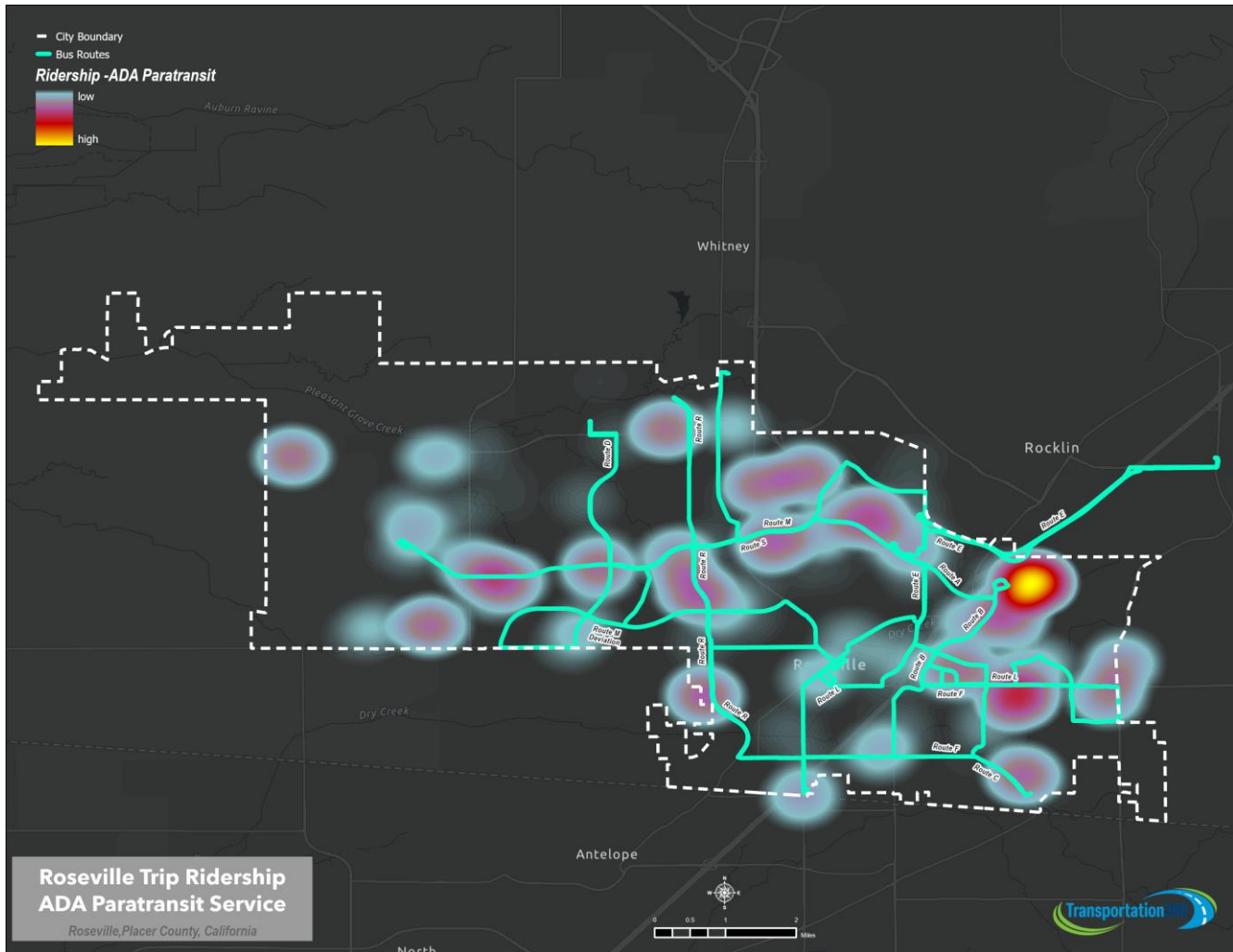


Figure 69 - ADA Paratransit Travel Demand

CORRELATION BETWEEN ARROW AND ADA RIDERSHIP

The correlation analysis between the month-to-month percentage change in ridership for DAR (Dial-a-Ride) and ADA (Americans with Disabilities Act) paratransit services in 2023 compared to 2021 and 2022 shows the following:

- The correlation between the percentage change in DAR and ADA ridership in 2023 compared to 2021 is 0.111, which indicates a very weak positive relationship.
- The correlation between the percentage change in DAR and ADA ridership in 2023 compared to 2022 is 0.352, which indicates a weak to moderate positive relationship.

These results show no strong correlation between increases in DAR ridership and decreases in ADA ridership. In other words, the increase in ridership for DAR services does not strongly relate to a decrease in ridership for ADA services across the months. This could mean that different factors are affecting the ridership of these two services, and they are not directly substituting for one another significantly.

Table 4 - Correlation between Arrow and ADA Ridership

Month	% Change DAR 2023 vs 2021	% Change DAR 2023 vs 2022	% Change ADA 2023 vs 2021	% Change ADA 2023 vs 2022
Jan	15.22%	15.22%	104.23%	52.57%
Feb	5.93%	5.93%	61.79%	37.24%
Mar	-2.65%	-2.65%	35.99%	15.93%
Apr	3.52%	3.52%	17.30%	4.31%
May	24.12%	24.12%	27.24%	13.54%
Jun	37.66%	37.66%	41.92%	40.24%
Jul	5.98%	32.66%	23.34%	28.10%
Aug	17.94%	13.73%	89.78%	28.71%
Sep	2.11%	4.30%	11.59%	23.40%
Oct	27.05%	16.33%	20.56%	16.62%
Nov	46.84%	58.34%	42.81%	33.43%

These correlations suggest that while there may be some relationship between the ridership of the two services, it is not strong enough to imply that the changes in one directly cause the changes in the other.

COMMUTER SERVICES

In this section, we delve into an insightful examination of the commuter services provided by Roseville Transit, focusing particularly on the routes leading into Downtown Sacramento. Our analysis spans from 2020 to 2023, a transformative era marked by unprecedented changes in commuting patterns largely due to the global pandemic and the subsequent shift towards remote working. By meticulously parsing ridership data segmented into morning and evening commute times, this report aims to uncover underlying trends, seasonal fluctuations, and the overall trajectory of ridership growth or decline. Our objective is to comprehensively understand how external factors such as public health crises, policy shifts, and evolving workplace norms have influenced commuter behavior and transit usage over these four critical years.

The data reflects monthly ridership figures, including morning (AM) and evening (PM) commute times. The analysis identifies month-to-month and year-over-year trends to understand patterns, seasonal variations, and overall ridership growth or decline over the four years.

DATA OVERVIEW

The dataset comprises monthly ridership numbers segmented into AM and PM slots for each year from 2020 to 2023. This format allows for a comprehensive analysis of temporal trends within and across years.

MONTH-TO-MONTH TRENDS

A key observation from the month-to-month analysis is the presence of distinct seasonal patterns in ridership. Specific months consistently show higher or lower ridership figures, suggesting influences such as weather conditions, public holidays, or academic calendars. Overall, there is a noticeable fluctuation in monthly ridership numbers each year, highlighting the impact of short-term factors on commuter behavior.

ANALYSIS

- **July:** Starting with July, there's a steady increase in ridership over the years. The growth from 2020 to 2021 is modest at 5.73%, but it surges significantly by 39.12% from 2021 to 2022, followed by an 8.42% increase into 2023.
- **August:** August shows a remarkable 43.77% increase from 2020 to 2021, accelerating further with a 58.13% increase into 2022. However, the growth moderates substantially to just 1.43% into 2023.

- **September and October:** Both months exhibit similar patterns. September sees a 55.13% increase from 2020 to 2021 and a 17.96% increase in 2022, with a further 19.66% rise in 2023. October follows with a significant 61.76% increase from 2020 to 2021, a 21.83% increase into 2022, and a more modest 5.70% increase into 2023.
- **November:** There is a sharp 63.03% increase in ridership from 2020 to 2021, followed by a substantial 39.86% rise in 2022 and a slight increase of 5.84% in 2023.
- **Standout Months**
- **August and October of 2021:** Both months stand out for their substantial year-over-year increases in ridership, indicating a strong recovery or change in commuter habits post-2020.
- **Moderation in Growth:** Despite the upward trends, there's a noticeable moderation in growth rates from 2022 to 2023, especially in months like August and October.

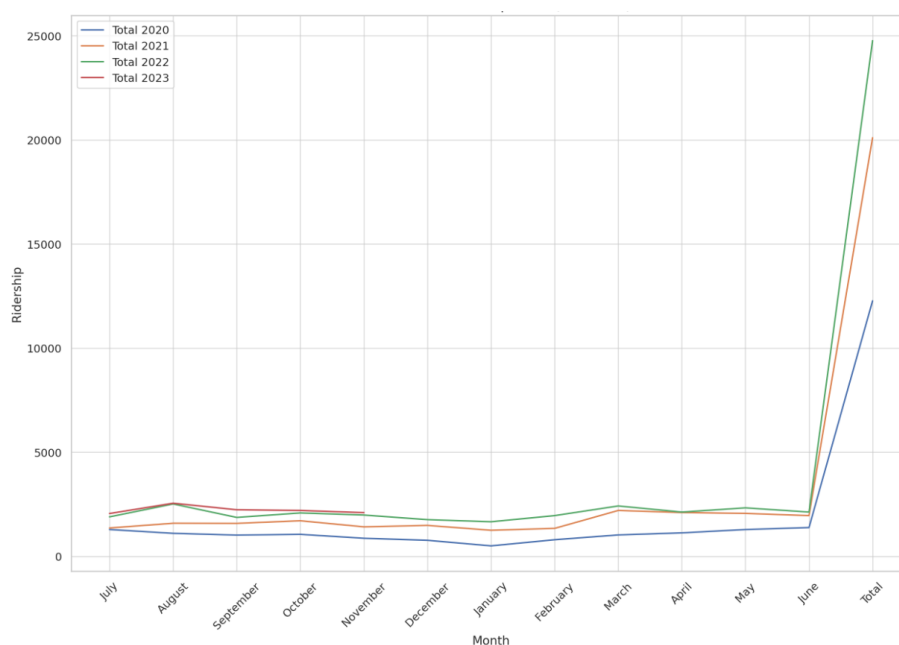


Figure 70 - Commuter Service Month-to-Month Ridership Trends

Key Points:

- Seasonal variations are evident, with certain months like August and October generally showing higher ridership.
- November often experiences a dip in ridership, potentially due to holiday-related factors.

YEAR-OVER-YEAR TRENDS

The year-over-year analysis reveals significant insights into the evolving nature of ridership over the four years.

- **Growth Post-2020:** A general upward trend in ridership is observed, particularly from 2020 to 2021. This could be attributed to factors such as a post-pandemic recovery, changes in commuting patterns, or enhancements in transit services.
- **Significant increase in 2021-2022:** The period between 2021 and 2022 experienced a substantial increase in ridership. This period's growth rate was notably higher than in other years, possibly due to economic revival or changes in public perception of transit safety.
- **Moderation in 2022-2023:** While the overall trend continues to be upward, the growth rate in 2022-2023 shows signs of moderation, suggesting a possible stabilization after a phase of rapid growth.
- **Notable Growth:** The largest increases are in January (147.73% from FY 2021 to FY 2022) and December (92.38% from FY 2021 to FY 2022).

Key Trends:

- Consistent growth in ridership year-over-year, with varying degrees of change across different months.
- A marked increase in 2021-2022, followed by a more moderate growth in 2022-2023.
- COVID-19 Recovery – at its peak in 2017, Roseville Transit carried over 139,000 riders annually into Sacramento. Since the pandemic, that number has dropped precipitously. While the department used to provide services to over 530 riders per day, as of the most current data set, Roseville Transit averages approximately 100 riders per day.

IMPACT OF WORK-FROM-HOME POLICIES

Both the State of California, the largest employer in Sacramento, and the city itself have enacted work-from-home guidelines that have resulted in far fewer riders needing to travel into Sacramento.

NOTABLE TELEWORK POLICIES

The State of California has a telework policy that allows eligible employees to request to work remotely, subject to the approval of their supervisors and departments. The policy aims to provide benefits such as reduced commute costs, improved air quality, increased productivity, and flexibility for employees and departments. The policy covers the following aspects:

- Eligibility criteria: Employees must have satisfactory performance ratings, no disciplinary actions, and no telework-related conflicts with their job duties, work schedules, or co-workers.
- Application process: Employees must submit a telework agreement form and a telework self-certification checklist to their supervisors for review and approval.
- Telework schedule: Employees and supervisors must agree on a regular telework schedule that specifies the days and hours of telework, the location of the telework site, and the method of communication.
- Equipment and expenses: Employees are responsible for providing and maintaining their own equipment and internet service unless otherwise authorized by their departments. With prior approval and proper documentation, employees may be reimbursed for work-related expenses, such as phone calls, postage, and printing.
- Performance and evaluation: Employees must maintain the same level of performance, accountability, and communication as they were working in the office. Supervisors must monitor and evaluate the employees' telework performance and provide feedback and coaching as needed.

The City of Sacramento also has a remote work policy that is a voluntary and cooperative arrangement between employees and the city. The policy states that remote work is not an entitlement or a vested right, and not all city employees perform work that qualifies for remote work¹. The policy covers the following aspects:

- Eligibility criteria: Employees must have a satisfactory or better performance rating, no disciplinary actions within the last 12 months, and a suitable remote work site that meets safety and security standards.
- Application process: Employees must submit a remote work agreement form and a remote work site self-inspection form to their supervisors for review and approval.

- Remote work schedule: Employees and supervisors must agree on a regular remote work schedule that specifies the days and hours of remote work, the location of the remote work site, and the method of communication.
- Equipment and expenses: The city may provide employees with equipment and supplies necessary for remote work, such as computers, phones, and software. Employees may be reimbursed for work-related expenses, such as phone calls, internet service, and printing, with prior approval and proper documentation.
- Performance and evaluation: Employees must maintain the same level of performance, accountability, and communication as if they were working in the office. Supervisors must monitor and evaluate the employees' remote work performance and provide feedback and coaching as needed.

OFFICE OCCUPANCY

Office occupancy is the percentage of office space that is occupied by tenants or owners. Office occupancy in Sacramento has declined due to the pandemic and the shift to remote work. The regional vacancy rate rose to 20.3% in Q4 2023, nearing the record high of 21.7% in 2011. Some office buildings are being converted to residential units to meet the housing demand. The office occupancy trends in Sacramento are as follows:

- Downtown Sacramento: The vacancy rate increased to 18.9% in Q4 2023, up from 15.7% in Q4 2022. The average asking rent decreased to \$2.88 per square foot per month, down from \$2.94 in Q4 2022. The net absorption was negative 215,000 square feet, meaning more space was vacated than leased.
- Suburban Sacramento: The vacancy rate increased to 21.1% in Q4 2023, up from 18.5% in Q4 2022. The average asking rent decreased to \$2.01 per square foot per month, down from \$2.04 in Q4 2022. The net absorption was negative 375,000 square feet, meaning more space was vacated than leased.

IMPACTS TO TRANSIT

Public transit agencies have faced challenges such as reduced ridership, revenue loss, and service cuts due to the pandemic and the rise of remote work. Some of the impacts and responses of public transit agencies are:

- **SacRT:** SacRT experienced a 70% drop in ridership and a 25% drop in revenue in 2020 due to the pandemic. SacRT received \$112 million in federal relief funds to maintain its operations and avoid layoffs. SacRT also implemented safety and sanitation measures, such as requiring face masks, installing hand sanitizer dispensers, and disinfecting vehicles and stations. SacRT also launched new services, such as Smart Ride on-demand microtransit, Airport Express bus, and SmartPass mobile app.
- **Folsom Stage Line:** Folsom Stage Line experienced a 90% drop in ridership and a 50% drop in revenue in 2020 due to the pandemic. Folsom Stage Line received \$1.6 million in federal relief funds to maintain its operations and avoid layoffs. Folsom Stage Line also implemented safety and sanitation measures, such as requiring face masks, installing plastic barriers, and disinfecting vehicles. Folsom Stage Line also reduced its service frequency and hours and suspended some routes.
- **Causeway Connection:** Causeway Connection is a new electric bus service that connects UC Davis and UC Davis Health campuses, launched in April 2020. Causeway Connection experienced low ridership due to the pandemic and the shift to remote work. Causeway Connection received \$3.6 million in state and federal grants to fund its operations and purchase its vehicles. Causeway Connection also implemented safety and sanitation measures, such as requiring face masks, limiting capacity, and disinfecting vehicles. Causeway Connection also adjusted its service frequency and hours and offered free rides for UC Davis affiliates.

SUMMARY

The data, broken down into monthly ridership figures for morning and evening commutes, reveals distinct month-to-month seasonal patterns, such as increased ridership in August and October and a decrease in November. This suggests influences like weather conditions and public holidays. A year-over-year analysis shows a general upward trend in ridership, especially significant between 2021 and 2022, likely due to post-pandemic recovery and changes in commuting patterns. However, there's a moderation in growth during 2022-2023, indicating a possible stabilization after a phase of rapid growth.

The impact of work-from-home policies implemented by the State of California and the City of Sacramento is notable, with these guidelines contributing to a decrease in commuters traveling to Sacramento. Both entities have comprehensive telework policies that outline criteria for eligibility, application processes, telework schedules, equipment responsibilities, and performance evaluation methods.

Office occupancy trends in Sacramento have shifted significantly due to the pandemic and the move towards remote work, leading to increased vacancy rates in both downtown and suburban areas. This shift has prompted some office buildings to convert to residential units.

Public transit agencies like SacRT, Folsom Stage Line, and Causeway Connection have been heavily impacted by reduced ridership and revenue. They have received federal relief funds to maintain operations and avoid layoffs and have adapted by implementing safety measures, reducing service frequency, and introducing new services like on-demand microtransit and electric bus services. These changes reflect the agencies' efforts to adapt to commuters' evolving needs and behaviors in the post-pandemic landscape.

Peer Review

PEER AGENCY OVERVIEW

The "Peer Review" report for Roseville Transit presents a comprehensive comparative analysis of Roseville's transit services against similar agencies in California, focusing on key operational metrics.

Roseville Transit was compared with peer agencies based on factors like population density, educational attainment, financial budgets, and service demand. The agencies included cities like Fairfield, Santa Rosa, and Tulare, in the counties of Placer and Sonoma. The report assessed key metrics such as cost per revenue hour, total passenger trips, and farebox recovery ratios, revealing Roseville's position in relation to its peers.

A notable trend was the variation in costs per revenue hour among different agencies. While most exhibited an increase over the years, Roseville showed a slight decrease in 2021, suggesting efficient cost management. However, a significant decline in total passenger trips from 2019 to 2021 was observed across all agencies, largely due to the COVID-19 pandemic's impact on public transportation.

The report also delves into fixed-route, commuter, and demand-response services, assessing metrics like ridership, service efficiency, and financial performance. Roseville's fixed-route service saw a decline in ridership over the years, mirroring broader regional trends. In terms of commuter services, while Roseville experienced a decrease in passenger trips, its farebox recovery percentage remained strong, indicating effective fare revenue management. The demand-response service analysis revealed Roseville's moderate performance, with some fluctuations in ridership and efficiency metrics.

COVID-19's impact on transit services is a critical focus, with the pandemic significantly affecting ridership, fare collections, and operating expenses across all agencies. The report noted the adoption of safety protocols and digital solutions as key responses to these challenges.

Overall, the "Peer Review" report for Roseville Transit provides valuable insights into the agency's performance relative to its peers, highlighting areas of strength and opportunities for improvement. It serves as a crucial tool for benchmarking and strategizing future enhancements to Roseville's transit services.

The following presents a comparative analysis of various transit agencies in California, examining factors like population density, educational attainment, financial budgets, and service demand response.

Innovate Mobility utilizes a "likeness score" that compares agencies that provide data to the National Transit Database. This likeness score is an index of multiple factors, including those listed above. Those factors are combined to create the index determining Roseville Transit's peers. The peers chosen are as follows (all systems are in California):

Agency Name	Location
City of Fairfield, California	Fairfield
City of Roseville	Roseville
City of Santa Rosa	Santa Rosa
City of Tulare	Tulare
City of Union City	Union City
County of Placer	Auburn
County of Sonoma	Santa Rosa
El Dorado County Transit Authority	Diamond Springs
Livermore / Amador Valley Transit Authority	Livermore
Solano County Transit	Vallejo
Stanislaus County	Modesto
Transit Joint Powers Authority for Merced County	Merced
Ventura County Transportation Commission	Camarillo
Western Contra Costa Transit Authority	Pinole
Yolo County Transportation District	Woodland
Yuba-Sutter Transit Authority	Marysville

Table 5 - Peer List

The following key metrics were utilized to determine the peers:

Agency Name	Urban Area Population	Total Revenue Miles Operated	Total Operating Budget	Population Density	Percent Population with College Degree	Population Growth Rate	Percent Poverty	Percent Service Demand Response	Percent Service Purchased
City of Fairfield, California	145,918	1,274,643	\$11,941,036	3,698	26.9	29.92	11.1	13%	100%
City of Roseville	1,919,826	580,081	\$5,367,025	4,076	35.5	28.3	12	25%	100%
City of Santa Rosa	311,132	732,337	\$10,335,831	3,176	35.1	2.72	10.2	28%	32%
City of Tulare	249,462	592,716	\$3,535,851	3,934	20.3	84.02	16	30%	100%
City of Union City	3,440,874	495,751	\$5,354,201	6,569	52.5	3.42	9.7	29%	100%
County of Placer	1,919,826	1,436,535	\$13,679,681	4,076	35.5	28.3	12	32%	53%
County of Sonoma	311,132	1,339,826	\$14,499,614	3,176	35.1	2.72	10.2	39%	100%
El Dorado County Transit Authority	1,919,826	663,275	\$6,929,863	4,076	35.5	28.3	12	31%	0%
Livermore / Amador Valley Transit Authority	674,633	1,148,750	\$13,996,467	3,309	60.6	18.81	5.9	18%	100%
Solano County Transit	177,202	1,224,928	\$12,918,855	4,218	32.5	11.5	10.6	17%	100%
Stanislaus County	384,668	988,618	\$5,459,784	4,187	18.8	16.29	15.2	39%	100%
Transit Joint Powers Authority for Merced County	154,835	1,617,469	\$11,834,285	3,261	18.4	28.43	23.1	33%	100%
Ventura County Transportation Commission	374,827	1,411,750	\$8,551,151	4,442	28.4	0.49	10.2	22%	100%
Western Contra Costa Transit Authority	3,440,874	1,164,097	\$11,036,724	6,569	52.5	3.42	9.7	21%	100%
Yolo County Transportation District	1,919,826	1,761,259	\$13,040,433	4,076	35.5	28.3	12	22%	100%
Yuba-Sutter Transit Authority	129,384	983,276	\$7,542,655	3,347	16.7	12.99	19.6	32%	100%

Table 6 - Peer List Key Metric

SUMMARY OF KEY METRICS

Roseville Transit serves an urban population of 1,919,826 and operates 580,081 revenue miles on a budget of \$5,367,025. About 35.5% of its population have a college degree, and it has a rate of 28.3%. In comparison, the City of Santa Rosa has a larger operating budget of \$10,335,831 despite catering to a much smaller population of 311,132, and it also sees a higher service demand response at 28%. The City of Tulare is smaller in most metrics but stands out with a notably high population growth rate of 84.02% and a higher poverty rate of 16%. In contrast, the City of Union City boasts a significantly larger population but operates fewer revenue miles. It also has a commendable 52.5% of its population with college degrees.

The County of Placer shares striking similarities in urban population and density with Roseville, yet it operates more than double the revenue miles. The County of Sonoma mirrors Santa Rosa in many aspects but outdoes it with a larger operating budget and a higher service demand response. El Dorado County Transit Authority aligns with Roseville's population figures but maintains a more substantial operating budget. Impressively, the Livermore/Amador Valley Transit Authority, with its smaller population, oversees more revenue miles and a larger budget. Furthermore, it leads to educational attainment, with 60.6% of its population holding college degrees.

Solano County Transit may be smaller than Roseville in several categories, but it operates on a disproportionately large budget. Stanislaus County serves a mid-sized population and has a noticeable dip in the percentage of residents with a college degree. Despite its smaller population, the Transit Joint Powers Authority for Merced County manages more significant revenue miles and a significantly increased budget. The Ventura County Transportation Commission, although smaller in various metrics, still commands a more substantial operating budget than Roseville.

Finally, the Western Contra Costa Transit Authority parallels Union City with a vast population but fewer service miles. The Yolo County Transportation District is on par with Roseville and the County of Placer in numerous metrics. On the smaller end, the Yuba-Sutter Transit Authority operates in an area with the least population among the listed entities and a lower percentage of college graduates. Still, it is noteworthy that it runs close to a million revenue miles. While many transit systems operate in regions with populations comparable to Roseville, their budgets, service miles, and other characteristics vary, signifying each area's unique needs and priorities.

COST PER REVENUE HOUR

In general, most transit authorities exhibited an increase in costs over the three years. The **City of Fairfield, California**, saw a pronounced escalation, beginning at \$117.67 in 2019, increasing to \$140.75 in 2020, and surging to \$209.41 by 2021. The **County of Placer** also experienced a substantial uptick, reaching the highest cost in 2021 at \$272.92, up from \$156.92 in 2019.

However, not all areas showed consistent upward trends. The **City of Roseville**, for instance, witnessed costs rise from \$122.65 in 2019 to \$132.91 in 2020, only to decrease slightly to \$131.25 in 2021. Similarly, the **Ventura County Transportation Commission** saw a reduction in 2021, with costs dropping to \$98.63 from \$106.72 in 2020.

The **Transit Joint Powers Authority for Merced County** maintained the lowest costs over the years, but these did show a slight increase from \$75.99 in 2019 to \$107.61 in 2021.

In summary, while most transit authorities in the list saw rising costs per revenue hour over the three years, there were a few exceptions. The reasons for these variances would require a deeper exploration into each region's operational, economic, and infrastructural factors.

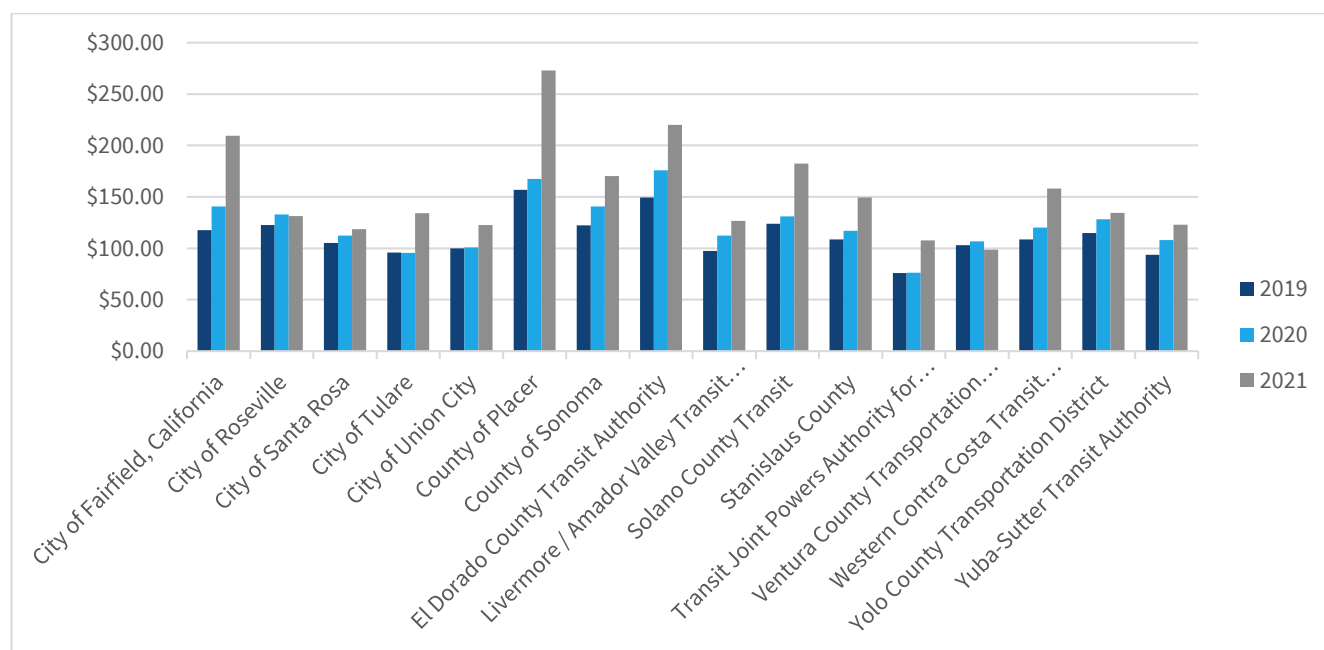


Figure 71 – Cost per Revenue Hour

TOTAL PASSENGER TRIPS

Across the board, there's a noticeable decline in passenger trips from 2019 to 2021 for all listed authorities. This drop is particularly pronounced from 2020 to 2021. For instance, the **City of Fairfield, California**, witnessed passenger trips drop significantly from 2,693,170 in 2019 to 310,441 by 2021. Similarly, the **City of Roseville** saw trips reduce from 996,884 in 2019 to 125,058 in 2021.

The **City of Santa Rosa**, which had one of the highest passenger trip counts in 2019 at 5,521,046, also experienced a sharp decrease to 788,625 by 2021. **Livermore / Amador Valley Transit Authority** and **Solano County Transit** showed similar high figures in 2019 with 5,073,545 and 4,303,518 passenger trips, respectively, dropping to 435,186 and 422,380 in 2021.

Even authorities with more modest initial figures, like the **El Dorado County Transit Authority**, which started with 1,156,043 trips in 2019, witnessed their figures plummet to 109,251 by 2021.

In summary, all transit authorities listed experienced a significant reduction in passenger trips over three years, with the most drastic declines occurring from 2020 to 2021. These declines were almost entirely due to the COVID-19 pandemic that affected public transportation ridership worldwide.

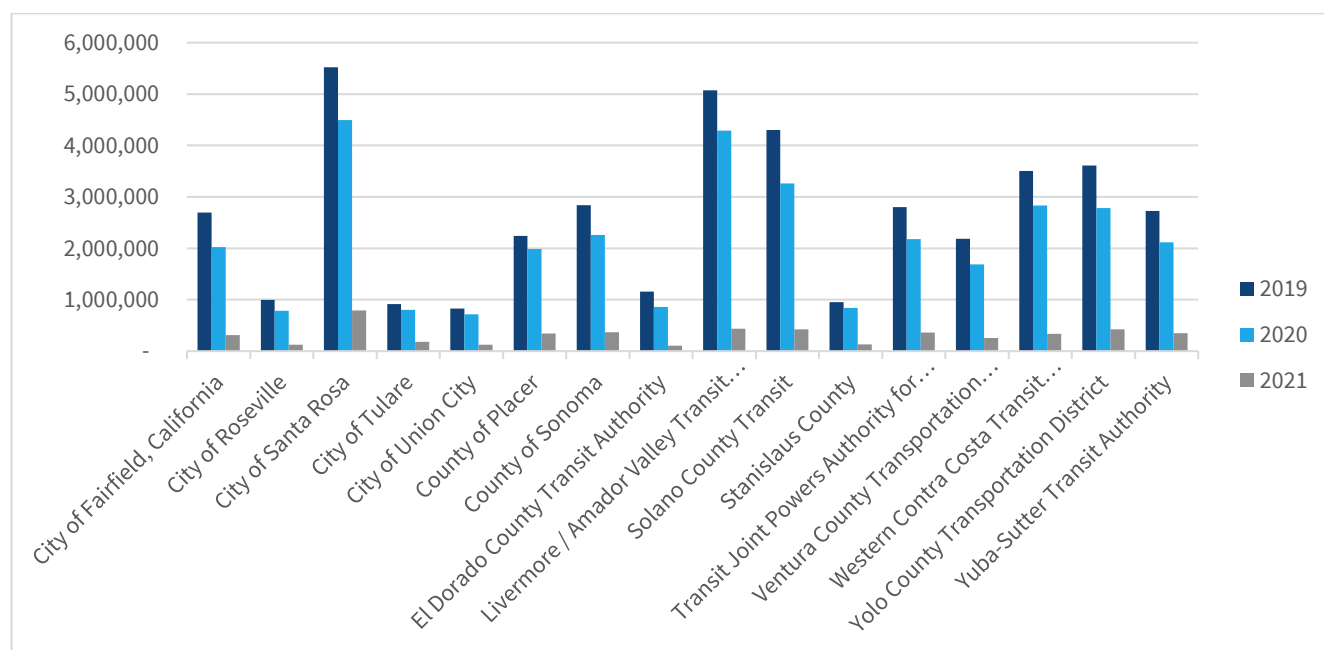


Figure 72 - Passenger Trips

FIXED ROUTE PEER REVIEW

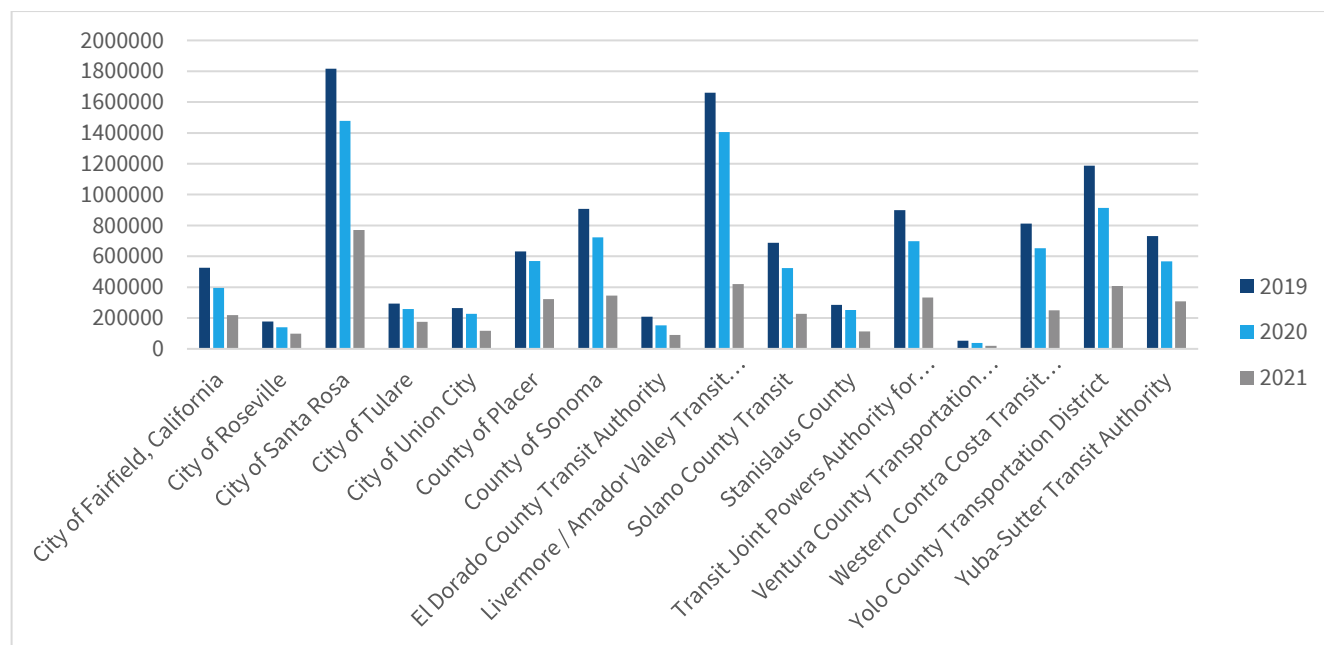


Figure 73 –Fixed Route Passenger Trips

The City of Roseville saw a decline in ridership over the three years: 178,277 trips in 2019, 140,605 in 2020, and 98,290 in 2021.

T City of Roseville, all listed transit authorities experienced a drop in ridership across the three years.

In 2019, the **City of Santa Rosa** and **Livermore / Amador Valley Transit Authority** had significantly higher ridership figures than Roseville, with 1,817,112 and 1,660,443 passenger trips, respectively. By 2021, their figures reduced to 771,112 and 420,226 respectively. Although they remained higher than Roseville's figures, the decline in percentage is noteworthy.

Ventura County Transportation Commission had the lowest ridership in all three years among all authorities listed. By 2021, they had just 18,885 passenger trips.

Relative to Roseville: In 2019, 10 authorities had higher ridership, while five had lower. By 2021, 8 authorities had higher ridership than Roseville, with 7 having lower ridership. This indicates that while Roseville did experience a decline in ridership, it was not as severely impacted percentage-wise as some other regions.

The City of Roseville experienced a decline in fixed route ridership over the three years, with the numbers dropping from 178,277 to 98,290. This pattern of decline is consistent with all listed transit authorities, suggesting overarching factors influencing this trend. Compared to other authorities, Roseville was positioned in the mid-range for ridership, with several authorities above and below its figures.

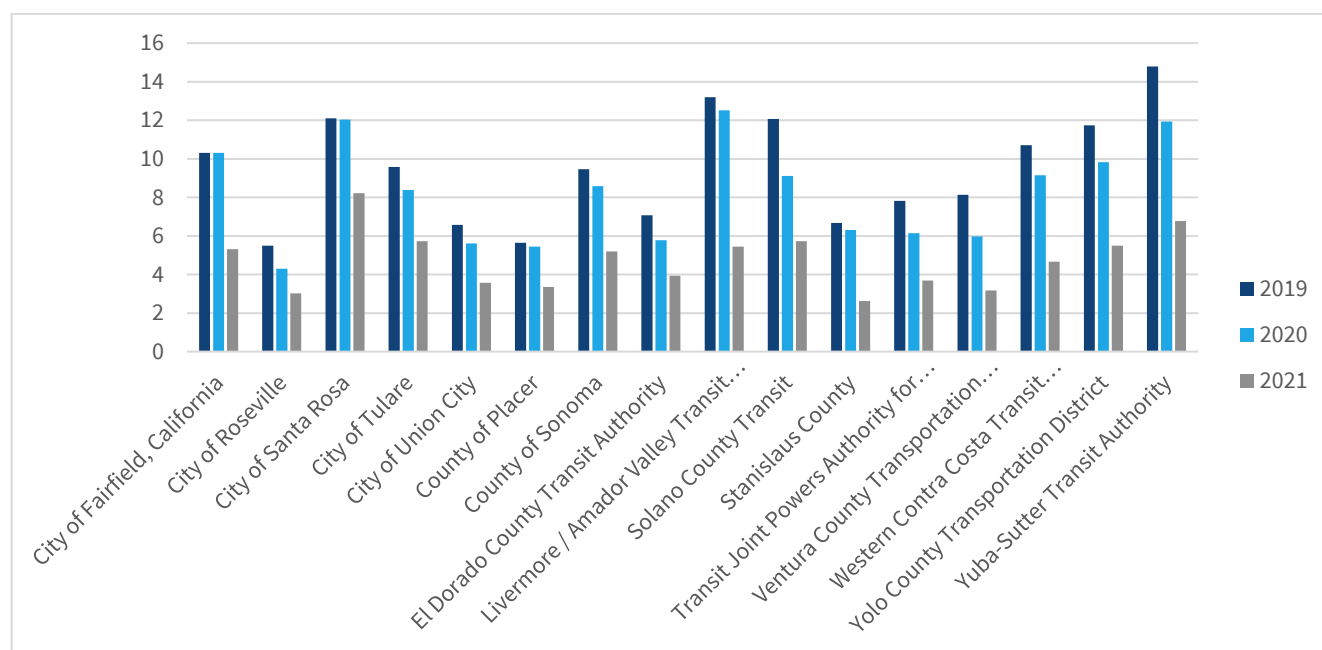


Figure 74 –Fixed Route Passenger Trips per Revenue Hour

The **City of Roseville** saw a continuous decline over the three years: from 5.5 in 2019 to 4.3 in 2020 and further down to 3.0 in 2021.

All listed entities experienced a decrease in their values from 2019 to 2021. This consistent decrease across the board suggests a broader, possibly external factor affecting these metrics for all regions.

In 2019, the **highest value** was observed for the **Yuba-Sutter Transit Authority** with 14.8, and the **lowest** was for the **City of Roseville** with 5.5. By 2021, while Yuba-Sutter still had a higher value of 6.8, Stanislaus County saw the lowest figure of 2.6.

Relative to Roseville:

- In 2019, 14 entities had higher values, and only 1 had a lower value.

- In 2020, 13 entities had higher values, and 2 had a lower value.
- In 2021, 14 entities had higher values, and only 1 had a lower value.

This comparison reveals that Roseville was consistently in the lower range throughout these years.

Livermore / Amador Valley Transit Authority experienced a significant drop from 13.2 in 2019 to 5.5 in 2021. City of Santa Rosa and Solano County Transit began with 12.1 in 2019 and dropped to 8.2 and 5.7 in 2021, respectively.

The City of Roseville saw a consistent decline in its metrics from 2019 to 2021, starting from 5.5 and reducing to 3.0. This decline mirrors the broader trend observed across all entities. Roseville's numbers were consistently among the lower values compared to other regions, suggesting it may face specific challenges or conditions that keep its metrics lower. Entities like Livermore/Amador Valley and the City of Santa Rosa witnessed significant decreases over this period, suggesting notable shifts or challenges in those areas.

REVENUE OPERATING HOURS

The **City of Roseville** remained relatively stable over the three years. Its revenue hours were 32,402 in 2019, slightly increased to 32,718 in 2020, and then almost returned to its 2019 figure of 32,408 in 2021.

Most entities saw a **decrease** in their revenue hours from 2019 to 2021. This pattern suggests broader, potentially external factors impacting revenue hours for all these regions.

Significant Decreases:

- **Livermore / Amador Valley Transit Authority** witnessed the most significant drop from 125,799 in 2019 to 77,053 in 2021.
- **The City of Santa Rosa** decreased from 86,386 in 2019 to 55,813 in 2021.
- **Transit Joint Powers Authority for Merced County** went from 114,903 in 2019 to 90,438 in 2021.

Relative to Roseville:

- Several entities had higher revenue hours in all three years than Roseville, indicating more extensive operations or longer operational hours. For instance, Livermore / Amador, Yolo County Transportation District, and the City of Santa Rosa consistently showed higher values than Roseville.
- Few entities like the City of Tulare, El Dorado County Transit Authority, and Ventura County Transportation Commission consistently reported lower revenue hours than Roseville.

Stability: While most entities witnessed fluctuations, the City of Tulare remained notably stable, with revenue hours hovering around 30,500 across the three years.

Summary:

The City of Roseville's revenue hours remained notably stable over the three years, showcasing minor fluctuations. In contrast, most other entities witnessed drops in their revenue hours during the same period, with some seeing significant decreases. Roseville's stability sets it apart in this data set, as most other regions faced challenges or factors that reduced their operational or revenue hours. Livermore / Amador Valley and the City of Santa Rosa were among the entities with the most significant drops, indicating considerable shifts in their operations or conditions.

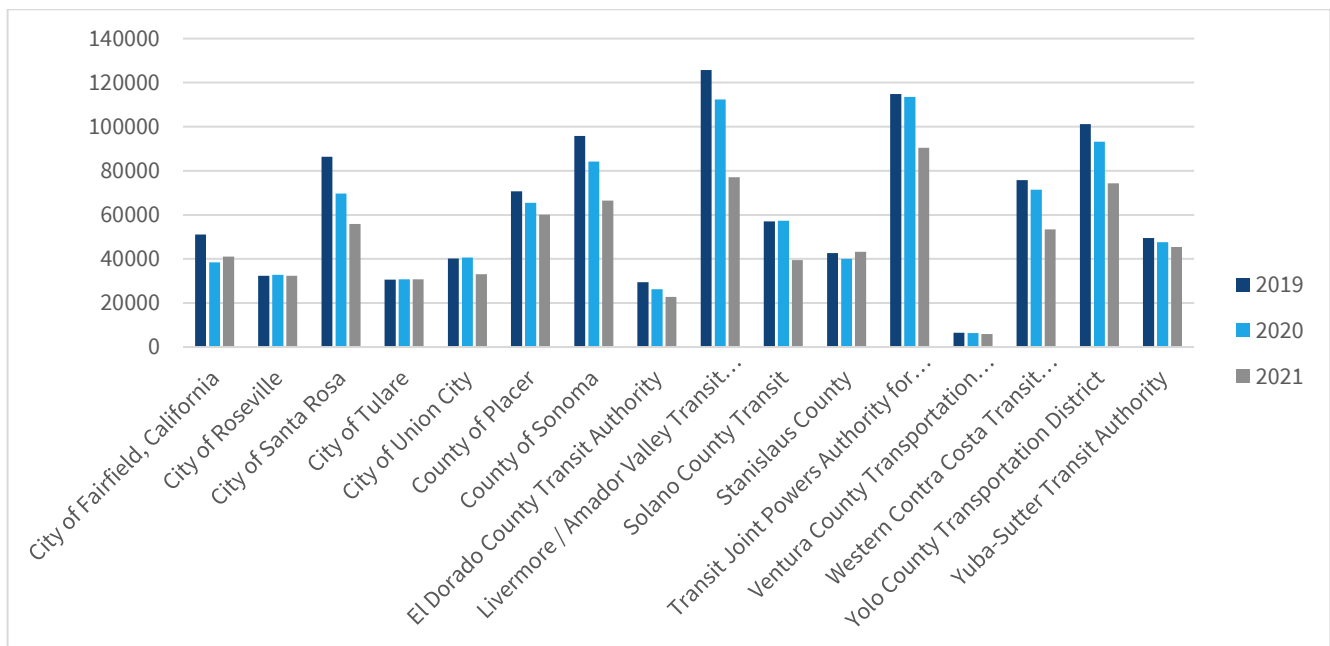


Figure 75 – Fixed Route Revenue Hours

REVENUE OPERATING SPEED

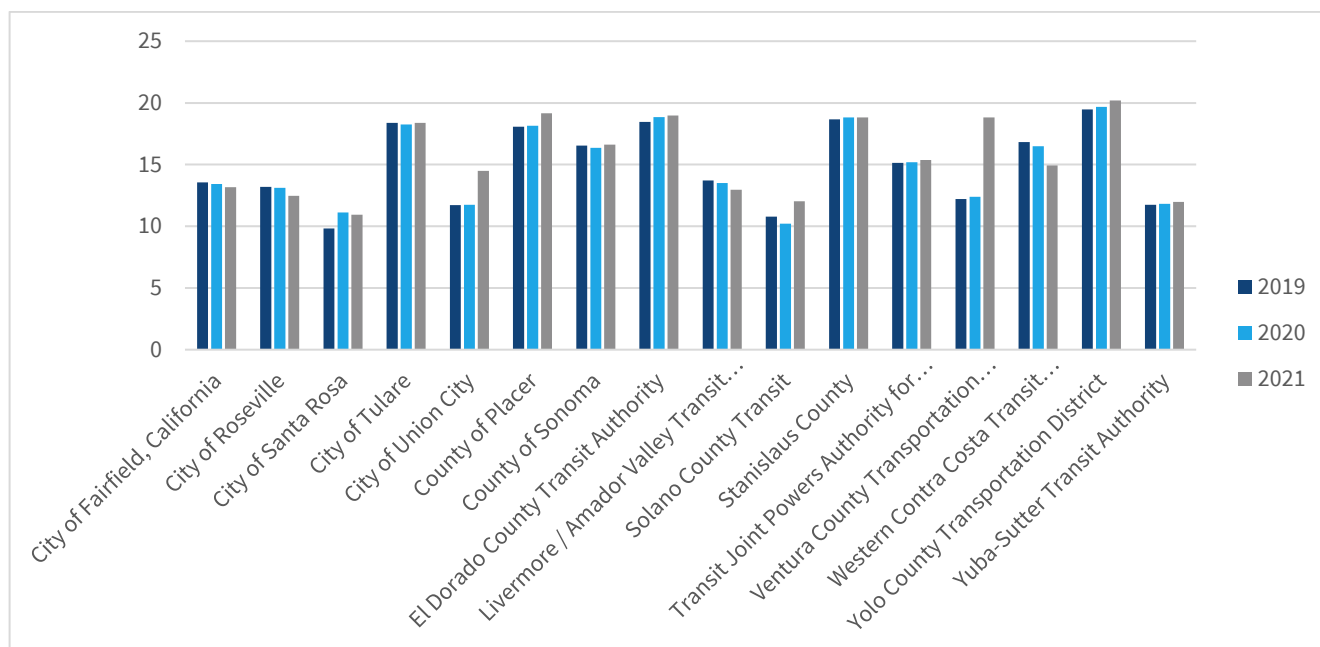


Figure 76 – Fixed Route Revenue Speed

The **City of Roseville** witnessed a slight decrease in average speed over the years, from 13.2 in 2019 to 12.5 in 2021. Most entities have varied average speeds across the years, with some showing increases and others showing decreases.

Significant Increases:

- The **City of Union City** increased from 11.7 in 2019 to 14.5 in 2021.
- **Ventura County Transportation Commission** showed a dramatic rise from 12.2 in 2019 to 18.8 in 2021.

Significant Decreases:

- While Roseville saw a reduction, its rate of decline was less pronounced than some entities like Solano County Transit, which went from 10.8 in 2019 to 10.2 in 2020, though it increased again to 12.0 in 2021.

Relative to Roseville:

- Several entities like the City of Tulare, County of Placer, El Dorado County Transit Authority, and Stanislaus County consistently maintained higher average speeds than Roseville across the three years.
- Entities like the City of Santa Rosa, City of Union City (for 2019 and 2020), Solano County Transit, and Yuba-Sutter Transit Authority consistently had lower average speeds than Roseville.

Yolo County Transportation District recorded the highest average speed, rising to 20.2 in 2021.

Summary:

The City of Roseville experienced a minor reduction in average speed from 2019 to 2021. Compared to other entities, Roseville's speed was mid-tier, with several regions operating at faster and slower average speeds. While some cities or districts, like Ventura County Transportation Commission, saw significant improvements, others remained relatively stable. The Yolo County Transportation District stood out as the fastest, progressively increasing speed.

OPERATING COSTS PER REVENUE HOUR

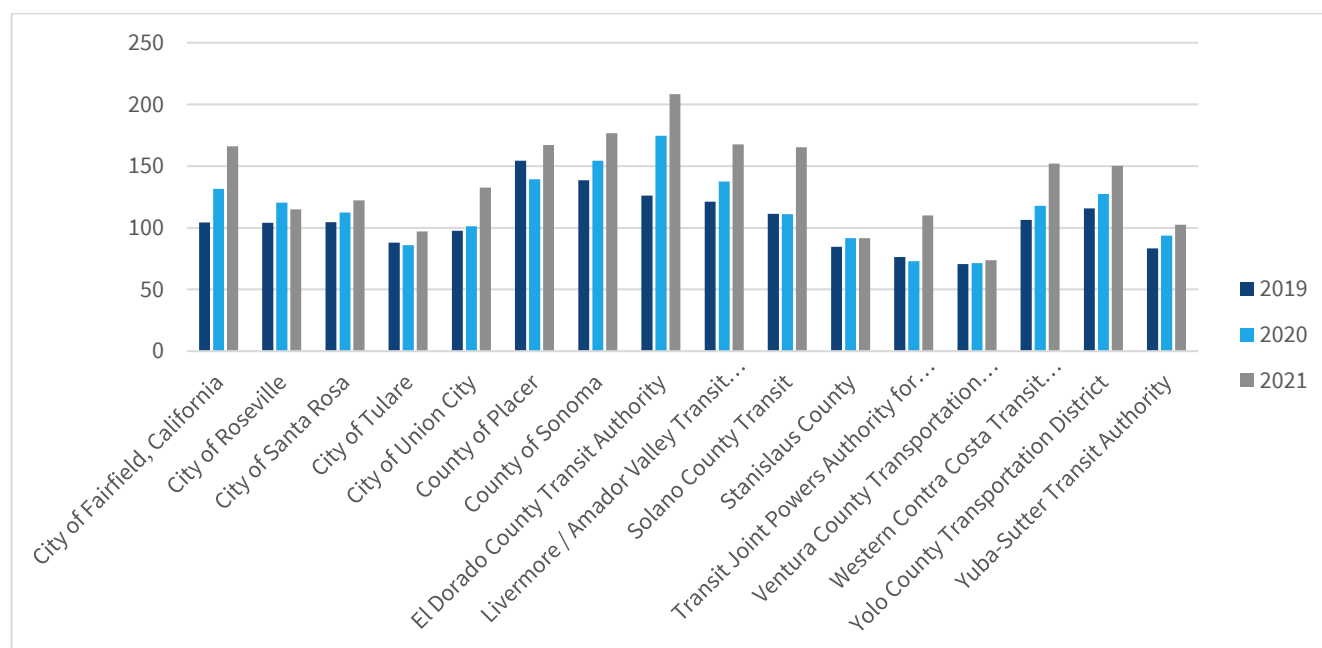


Figure 77 – Fixed Route Operating Costs per Revenue Hour

In 2019, the City of Roseville's average cost per revenue hour was competitive, with costs slightly below those of several peer entities, including the City of Fairfield and the City of Santa Rosa. Roseville's costs were significantly lower than those incurred by the County of Placer, County of Sonoma, and El Dorado County Transit Authority.

In 2020, Roseville experienced a moderate increase in its average cost per revenue hour but remained competitive. It had lower costs than the County of Placer, County of Sonoma, and El Dorado County Transit Authority. However, Roseville's cost was slightly higher than other entities, such as the City of Santa Rosa and the City of Tulare.

In 2021, Roseville's cost per revenue hour decreased, demonstrating its cost-effective approach. It remained competitive with several peer entities and notably had lower costs than the County of Sonoma and El Dorado County Transit Authority.

Overall, the City of Roseville's transit service showed cost competitiveness with other regional entities over the three years. The fluctuations observed in cost can be attributed to various factors, including service levels, operational efficiencies, and external economic conditions.

FAREBOX RECOVERY

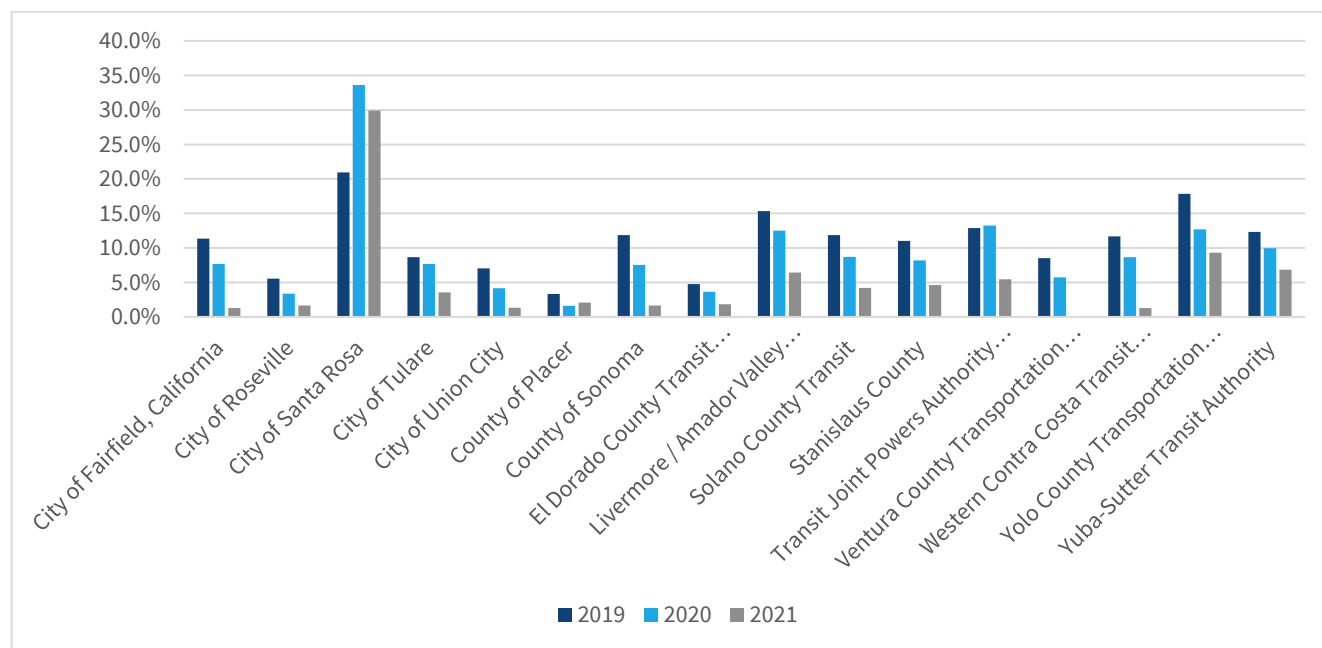


Figure 78 – Fixed Route Farebox Recovery Ratio

Farebox recovery percentage signifies the proportion of operating expenses covered by fare revenue. Several observations can be made compared to the City of Roseville's farebox recovery percentages.

The City of Roseville exhibited a consistently lower farebox recovery percentage than most other entities in the dataset over the three years. This suggests that Roseville relied heavily on subsidies and alternative revenue sources to sustain its public transit services. Conversely, entities like Fairfield, Santa Rosa, Tulare, Union City, El Dorado County Transit Authority, Livermore/Amador Valley Transit Authority, Solano County Transit, Stanislaus County, Transit Joint Powers Authority for Merced County, Yolo County Transportation District, and Yuba-Sutter Transit Authority generally reported higher farebox recovery percentages, indicating a greater ability to cover their operating expenses through fare revenue alone.

In particular, Santa Rosa consistently had significantly higher farebox recovery percentages than Roseville throughout the three years, indicating a higher degree of self-sufficiency in funding their transit operations. On the other hand, Ventura County Transportation Commission and Western Contra Costa Transit Authority reported varying farebox recovery percentages, with 2021 displaying substantial drops in these figures compared to the previous years.

COST PER TRIP

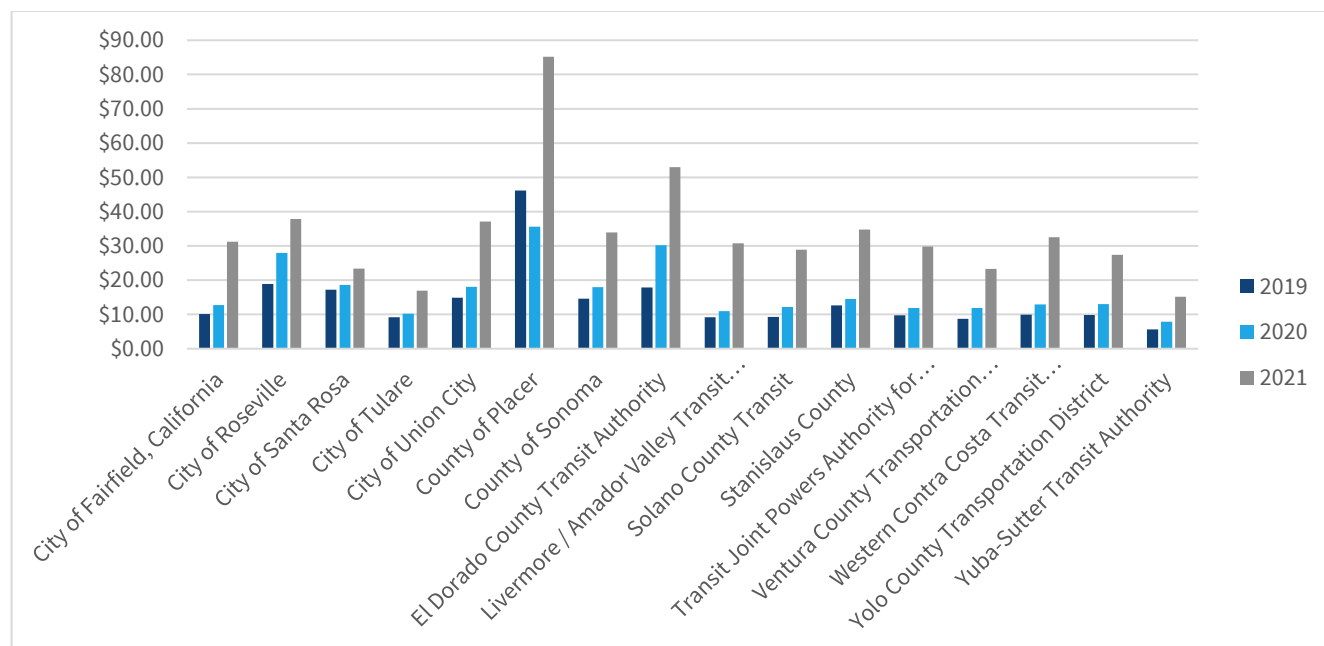


Figure 79 – Fixed Route Cost Per Revenue Passenger Trip

This metric measures the cost incurred for each passenger trip carried by the transit system. Here is an analysis and comparison of this data with the City of Roseville:

The City of Roseville consistently reported higher average operating expenses per passenger trip than most other entities in the dataset across all three years. In 2019, Roseville's operating expense per passenger trip was \$18.90, indicating that the city incurred a relatively high cost to provide transit services to each passenger. This trend continued in 2020 and 2021, with Roseville's operating expenses per passenger trip rising to \$27.99 and \$37.87, respectively.

In contrast, several other entities, such as Tulare, Yuba-Sutter Transit Authority, Ventura County Transportation Commission, and Solano County Transit, consistently reported lower operating expenses per passenger trip. For instance, Tulare's operating expense per passenger trip in 2019 was only \$9.18, which suggests a more cost-effective approach to providing transit services.

Additionally, the County of Placer and the El Dorado County Transit Authority reported notably high operating expenses per passenger trip, particularly in 2021, exceeding \$85 and \$52, respectively. This could be attributed to various factors, including service levels, route efficiency, and local economic conditions.

The data indicates that the City of Roseville faced challenges in containing operating expenses per passenger trip, and it may be beneficial for Roseville's transit management to explore cost optimization strategies to align its costs more closely with those of its peer entities and ensure cost-effective transit services for its residents.

FIXED ROUTE PEER REVIEW SUMMARY

AVERAGE COST PER REVENUE HOUR:

- The City of Roseville generally had competitive average costs per revenue hour compared to most other entities, remaining within a reasonable range from 2019 to 2021. It was often on par with or slightly below the average costs of several peer entities, such as the City of Fairfield, the City of Santa Rosa, and the City of Union City. In various years, Roseville's costs were notably lower than those of the County of Placer, County of Sonoma, and El Dorado County Transit Authority.

AVERAGE FAREBOX RECOVERY PERCENTAGE:

- Roseville consistently reported lower farebox recovery percentages than most other cities and transit authorities. Roseville relied heavily on subsidies and other revenue sources to cover its transit operating expenses. Several other entities, including Fairfield, Tulare, El Dorado County Transit Authority, and Yolo County Transportation District, reported higher farebox recovery percentages, suggesting a greater ability to cover costs through fare revenue alone. Santa Rosa stood out with significantly higher farebox recovery percentages throughout the years.

AVERAGE OPERATING EXPENSE PER PASSENGER TRIP:

Roseville consistently had higher average operating expenses per passenger trip than most other entities in the dataset. This indicates that Roseville incurred relatively higher costs for each passenger trip within its transit system. In contrast, several entities, such as Tulare, Yuba-Sutter Transit Authority, Ventura County Transportation Commission, and Solano County Transit, consistently reported lower operating expenses per passenger trip, indicating a more cost-effective approach. Some entities, like the County of Placer and El Dorado County Transit Authority, reported notably high operating expenses per passenger trip in specific years.

The City of Roseville generally exhibited competitive cost per revenue hour but had lower farebox recovery percentages and higher operating expenses per passenger trip than many other cities and transit authorities.

COMMUTER SERVICE PEER REVIEW

TOTAL RIDERSHIP

Commuter service is very important to Roseville Transit's operation. Not only is it a major contributor to fare revenue, but it also meets a significant need for city residents. With downtown Sacramento being a major draw, at least pre-COVID, Roseville Transit has invested heavily in vehicles to provide residents of the sister counties as high a level of service as possible. In examining the data, several trends emerge. Firstly, the City of Fairfield, California, experienced a substantial decrease in passenger trips in 2021, potentially attributed to the COVID-19 pandemic's influence on travel. Roseville, similarly, saw a decline in passenger trips throughout the three years, with a pronounced drop in 2021. The County of Placer also witnessed a significant decrease in passenger trips, particularly in 2021.

On the other hand, El Dorado County Transit Authority's decline was less severe. Solano County Transit experienced a significant drop in 2020 but displayed signs of recovery in 2021. Stanislaus County experienced a consistent decrease in passenger trips over the three years. Ventura County Transportation Commission saw a decline in passenger trips in 2020 but rebounded notably in 2021. Western Contra Costa Transit Authority experienced a decrease, especially in 2020, with a moderate recovery in 2021. Yuba-Sutter Transit Authority observed a decline in passenger trips but displayed a noticeable recovery in 2021. Most entities faced a decrease in passenger trips in 2020, attributable primarily to the pandemic's impact on commuter trips. In 2021, some entities began to recover, while others continued showing lower passenger trip numbers than previous years.

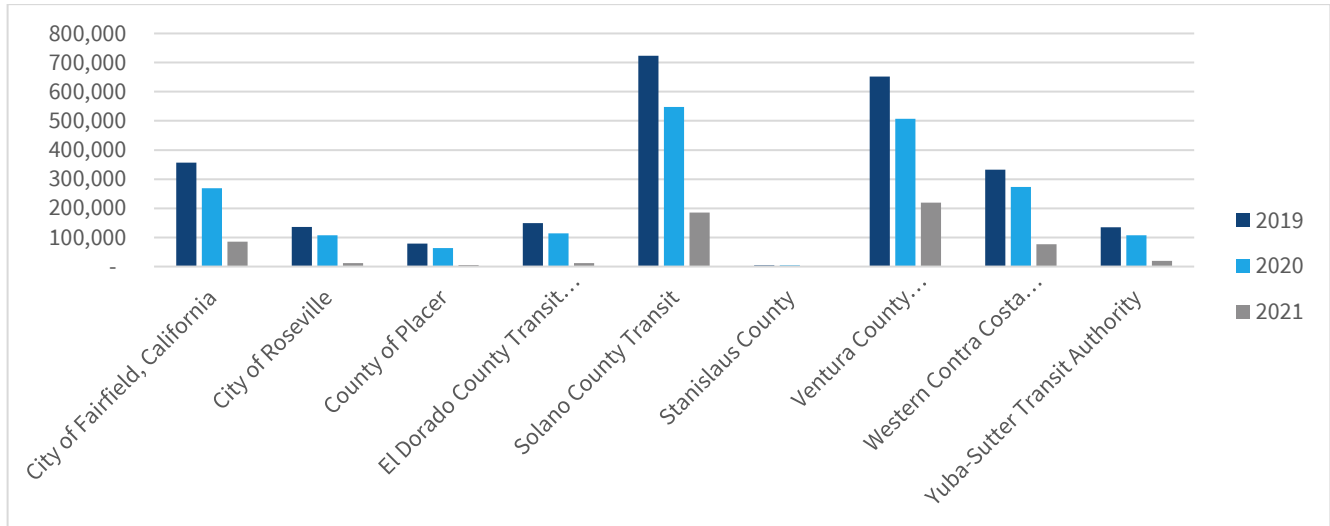


Figure 80 – Commuter Service Unlinked Passenger Trips

PASSENGER TRIPS PER REVENUE HOUR

Service effectiveness is not as critical of a metric for commuter services as most of these trips are homogenous. In other words, commuter services will never be as productive as fixed route services, as the riders are usually collected from central points like park and rides and then carried closed door to a central business district. Without the benefit of seat turnover (shorter rides that result in more passengers in the same seat), commuter route service effectiveness will almost always be lower than fixed route. That is not to say that there is not a need for commuter services; it is more to say that there is less opportunity for improvement. In 2019, Roseville had a notably higher average of 21 passenger trips per revenue hour, which reflects a relatively efficient and well-utilized transit system compared to other entities. In 2020, Roseville's average dropped to 17, likely due to the pandemic's impact on public transportation. However, this decrease was less severe than in many other places.

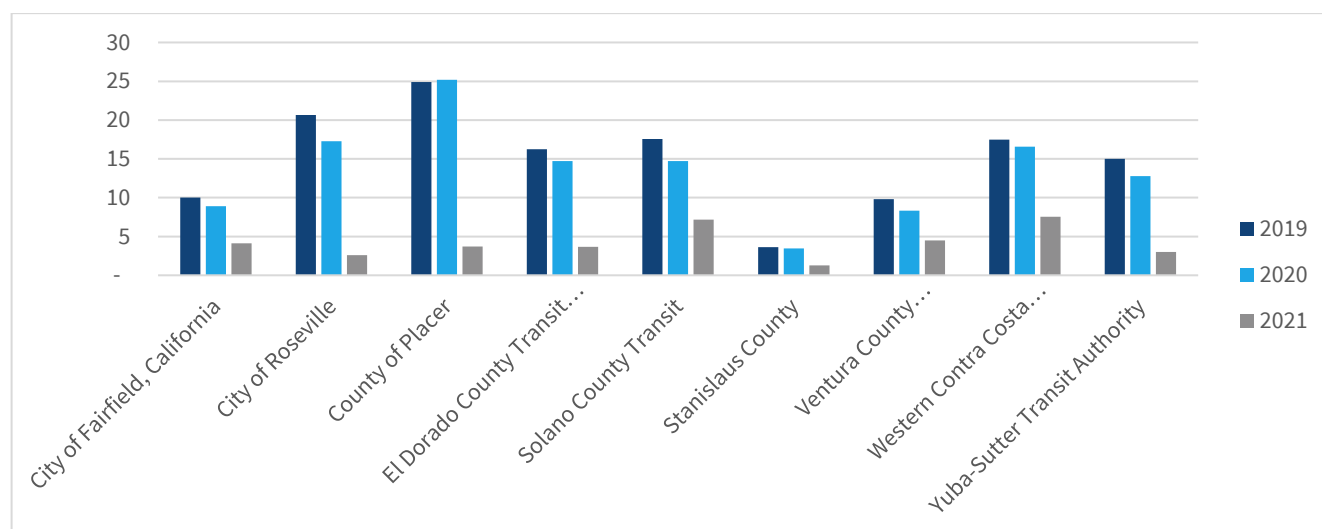


Figure 81 - Commuter Service Passengers per Revenue Hour

In contrast, in 2021, Roseville's average passenger trips per revenue hour decreased significantly to 3, substantially lower than previous years. This sharp drop may indicate ongoing challenges or disruptions in the transit system, potentially related to lingering pandemic effects or other factors unique to Roseville.

Comparatively, other entities like the County of Placer, El Dorado County Transit Authority, and Solano County Transit maintained relatively stable averages over the three years, with slight fluctuations but generally higher numbers than Roseville in 2021. Stanislaus County consistently had the lowest average passenger trips per revenue hour across all three years, indicating less efficient utilization of resources for public transit in that region. On the other hand, Western Contra Costa Transit Authority saw an increase in its average from 2019 to 2021, suggesting improved efficiency in passenger trips per revenue hour.

REVENUE HOURS

In 2019, Roseville operated an average of 6,583 revenue hours, which was significantly lower than entities like Solano County Transit and Ventura County Transportation Commission—despite the challenges posed by the COVID-19 pandemic in 2020, Roseville's average revenue hours remained relatively stable at 6,189, which may indicate effective management and resource allocation to maintain service levels. However, other entities, such as Solano County Transit and Ventura County Transportation Commission, reduced revenue hours due to the pandemic's impact.

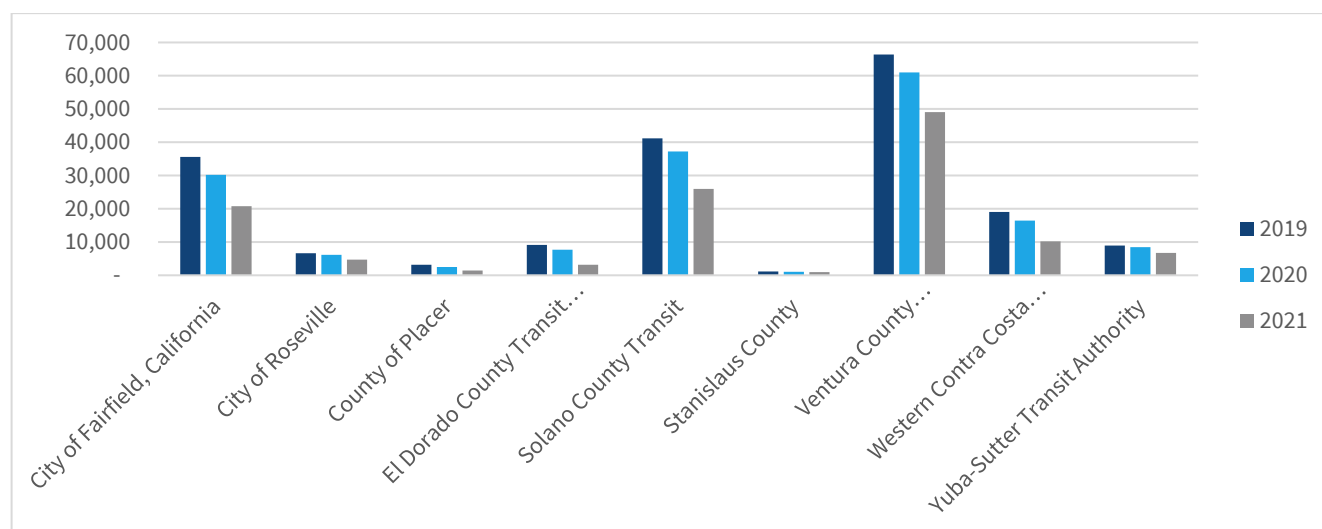


Figure 82 - Commuter Service Revenue Hours

In 2021, Roseville's average revenue hours decreased further to 4,723. This could be attributed to ongoing pandemic-related disruptions or changes in transit service demand. Nevertheless, Roseville's transit system still maintained a high-efficiency level compared to other entities with larger reductions in revenue hours.

Entities like Solano County Transit and Ventura County Transportation Commission continued to have higher average revenue hours, indicating more extensive transit services. On the other hand, some entities, like El Dorado County Transit Authority and Western Contra Costa Transit Authority, experienced substantial reductions in revenue hours from 2019 to 2021, possibly due to cost-saving measures.

COST PER REVENUE HOUR

In 2019, Roseville's average cost per revenue hour was \$166.3, slightly higher than the averages for some other entities like Solano County Transit and Ventura County Transportation Commission, indicating that Roseville's transit system incurred a moderate cost to provide its services.

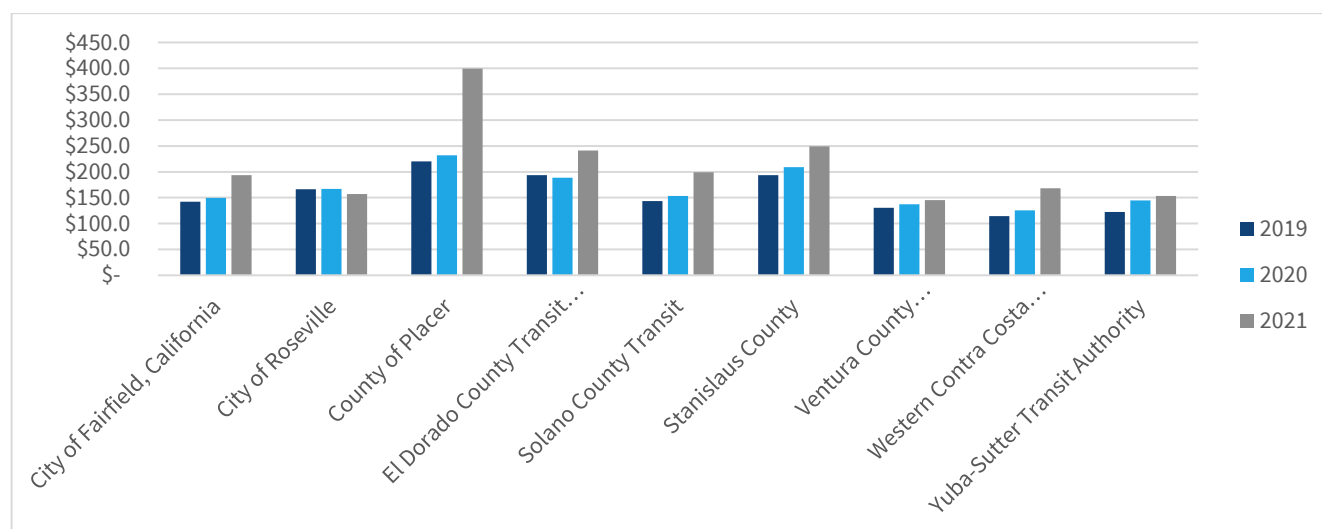


Figure 83 - Commuter Service Cost per Revenue Hour

In 2020, Roseville's average cost per revenue hour remained relatively stable at \$167.0, indicating effective cost management despite the challenges brought about by the COVID-19 pandemic. This stability may suggest efficient resource allocation within the transit system.

In 2021, Roseville's average cost per revenue hour decreased to \$156.8, lower than the previous two years. This could be attributed to various factors, including cost-saving measures or changes in service provision.

Comparatively, some entities like Ventura County Transportation Commission and Western Contra Costa Transit Authority consistently had lower average costs per revenue hour over the three years, possibly indicating efficient cost management practices.

On the other hand, the County of Placer consistently had one of the highest average costs per revenue hour, indicating that it may have faced challenges in cost efficiency within its transit system.

In summary, Roseville's transit system generally operated with a moderate cost per revenue hour, and it managed to maintain cost stability during the pandemic year 2020.

COST PER TRIP

In 2019, Roseville had an average operating expense per passenger trip of \$8.1, notably lower than most other entities, indicating efficient cost management in providing public transit services.

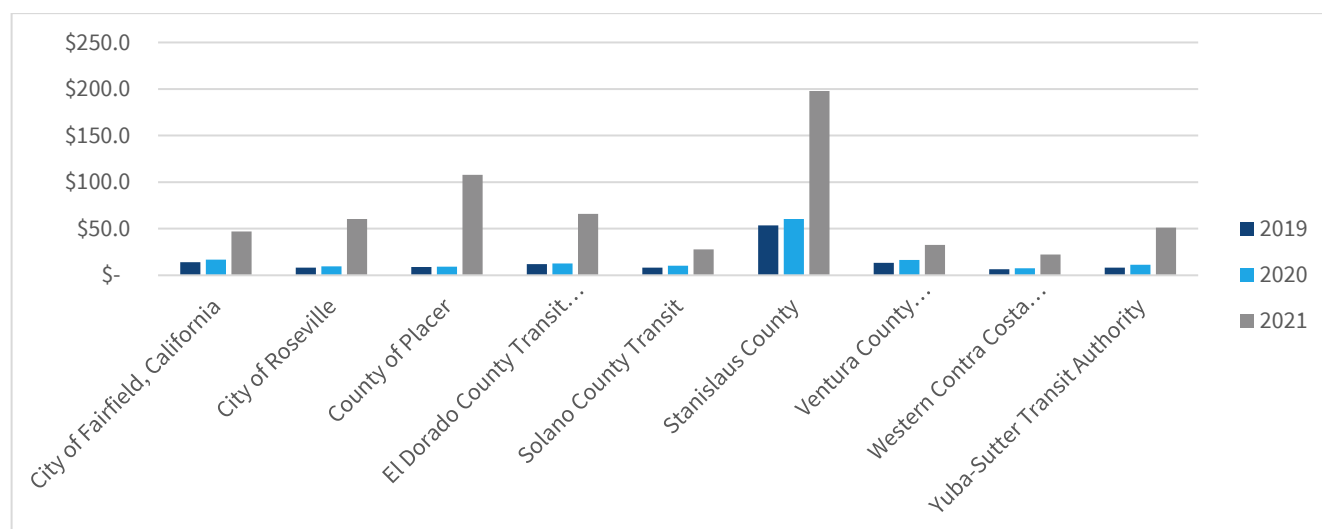


Figure 84 - Commuter Service Cost per Passenger Trip

In 2020, Roseville's operating expenses per passenger trip remained relatively low at \$9.7, showing that the city managed its expenses efficiently despite the challenges posed by the COVID-19 pandemic.

However, in 2021, Roseville's operating expenses per passenger trip increased significantly to \$60.4, marking a substantial rise compared to previous years. This is entirely due to a similar number of hours operated while passenger trips dramatically decreased.

In contrast, other entities like Western Contra Costa Transit Authority and Solano County Transit consistently maintained lower operating expenses per passenger trip over the three years, suggesting they lowered operating hours during the pandemic.

The county of Placer consistently had one of the highest operating expenses per passenger trip, indicating potential challenges in cost management within its transit system.

Stanislaus County had high operating expenses per passenger trip in all three years, substantially increasing in 2021, highlighting the need for cost-saving measures and efficiency improvements.

FAREBOX RECOVERY AND AVERAGE FARES

The average fare and farebox recovery ratio are two areas specific to commuter routes that are not compared in detail in the fixed route and demand response sections. As stated earlier, fare revenue from commuter service is essential to ensure the service is efficient and critical in helping to subsidize local routes. In 2019, Roseville's farebox recovery percentage was 54.1%, which was relatively high compared to other entities. This suggests that Roseville's commuter system effectively generated revenue from passenger fares to offset operating expenses.

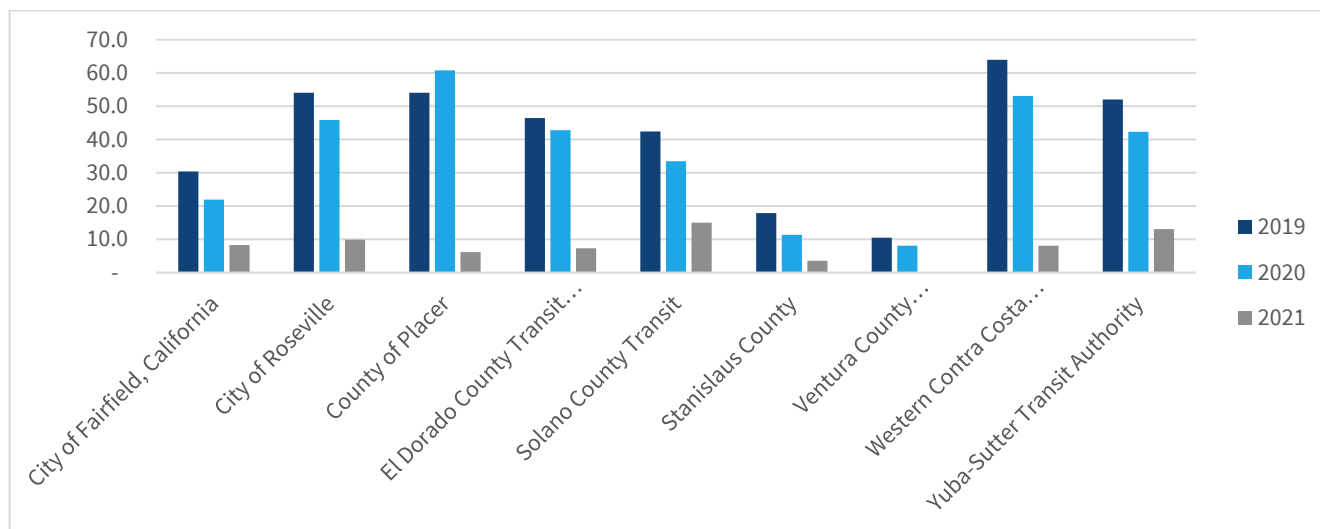


Figure 85 – Commuter Service Farebox Recovery Ratio

In 2020, despite the challenges posed by the COVID-19 pandemic, Roseville's farebox recovery percentage remained relatively strong at 45.8%, reflecting the resilience and adaptability of the city's transit system to maintain a healthy farebox recovery rate.

In 2021, Roseville's farebox recovery percentage decreased to 9.9%, marking a substantial drop compared to previous years. This sharp drop is attributed to ongoing pandemic-related disruptions or other factors unique to Roseville.

In contrast, other entities like the County of Placer, El Dorado County Transit Authority, and Western Contra Costa Transit Authority maintained relatively high farebox recovery percentages over the years, suggesting effective fare revenue management. Solano County Transit and Yuba-Sutter Transit Authority showed fluctuations in farebox recovery percentages, with noticeable decreases in 2020, likely due to the pandemic, and some recovery in 2021. Stanislaus County consistently had one

of the lowest farebox recovery percentages, indicating a greater reliance on subsidies to cover operating costs.

The average fare is another area specific to commuter services. Generally, the peer agencies received an average fare of 2-3x the local base fare. Yuba-Sutter, for example, does not give discounts on its commuter services.

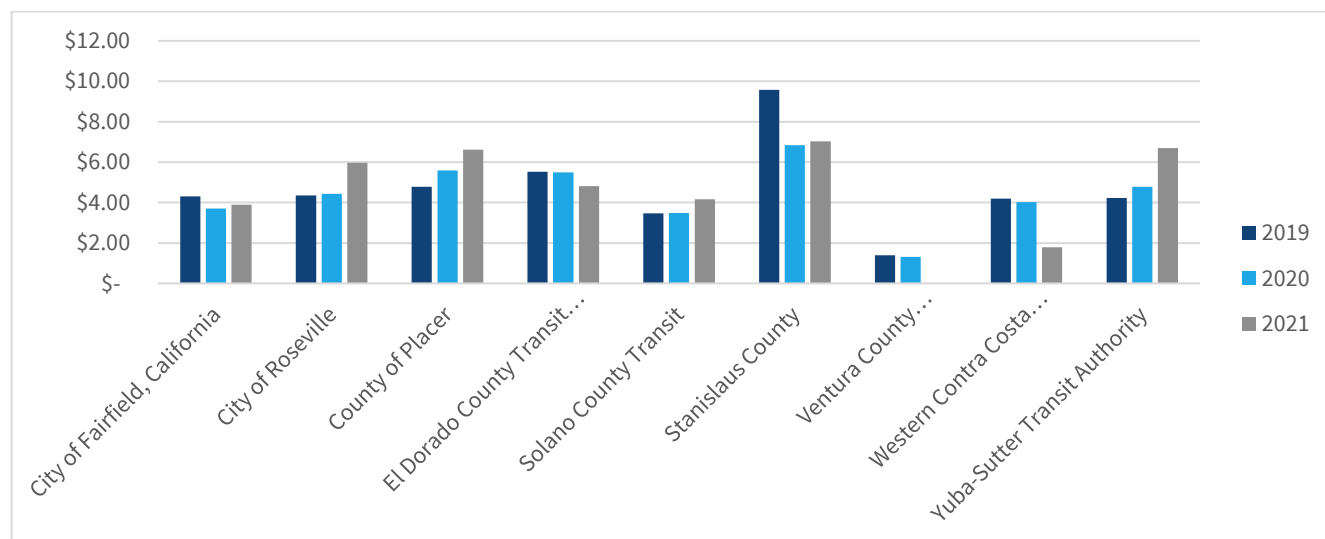


Figure 86 – Commuter Service Average Fare per Passenger

In 2019, Roseville's average fare per trip was \$4.36, slightly higher than most entities' average fare. This suggests that Roseville's transit system charged a moderate fare for its services. In 2020, Roseville's average fare increased to \$4.43, indicating a slight rise per passenger trip. In 2021, Roseville's average fare per trip increased significantly to \$5.97, marking a substantial jump compared to previous years.

In contrast, other entities like Ventura County Transportation Commission and Western Contra Costa Transit Authority had consistently lower average fares over the three years, suggesting more affordable transit options for passengers. The county of Placer had one of the higher average fares, which increased steadily over the three years, indicating a trend of increasing fares for their services. Stanislaus County initially had the highest average fare in 2019 but saw a decrease in subsequent years, possibly reflecting a strategic shift towards more competitive pricing. El Dorado County Transit Authority had relatively higher average fares but saw a decrease in 2021, indicating a potential effort to make their services more affordable. Solano County Transit and Yuba-Sutter Transit Authority showed fluctuations in average fares, with some increases in 2021, possibly related to adjustments in fare policies.

DEMAND RESPONSE PEER REVIEW

PEER SELECTION AND TOTAL RIDERSHIP

As of 2019, Roseville recorded an average of 27,202 passenger trips for the year, which is in the middle of the range compared to other entities. This suggests a reasonably well-utilized transit system serving its community.

There was a decrease in Roseville's passenger trips in 2020, which likely reflects the impact of the COVID-19 pandemic on public transportation ridership, which made Roseville's passenger trips go from 27,202 to 22,213. However, the decrease was less severe than in some other regions, indicating resilience in maintaining ridership levels.

In 2021, Roseville's average passenger trips further decreased to 14,497, potentially due to ongoing pandemic-related disruptions or other factors unique to Roseville.

Comparatively, other entities like Yuba-Sutter Transit Authority and the County of Sonoma consistently had higher average passenger trips over the three years, indicating larger transit systems with higher ridership levels.

Transit Joint Powers Authority for Merced County experienced substantial fluctuations in passenger trips, with a significant increase in 2021, possibly reflecting changes in service provision or demand.

The City of Fairfield, California, the City of Tulare, and the County of Placer had relatively more minor transit systems, with a decreasing trend in passenger trips.

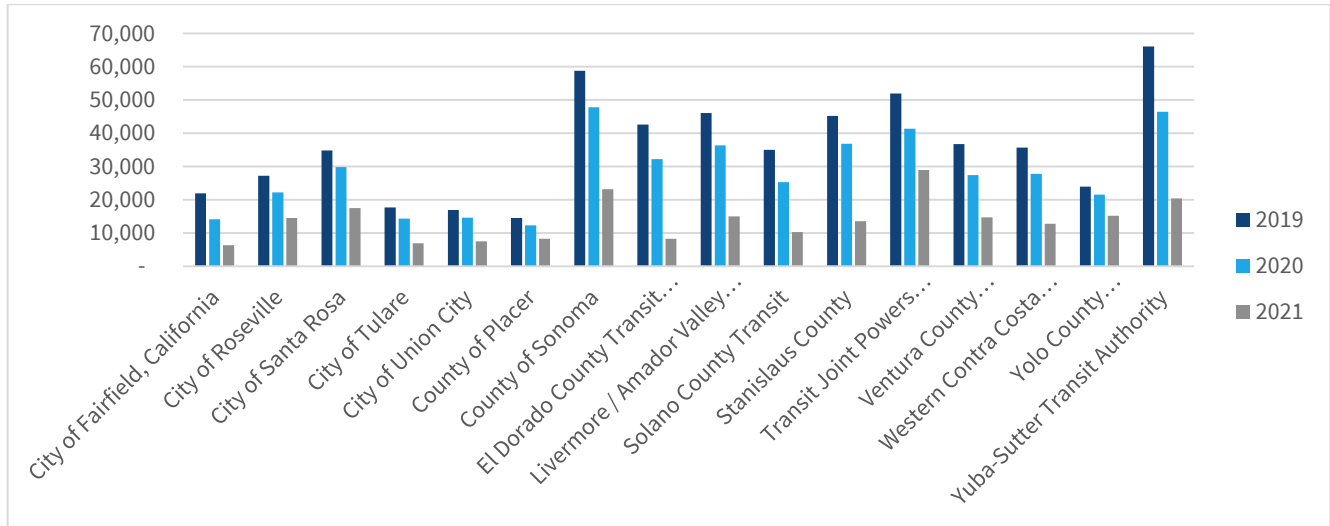


Figure 87 – Annual Demand-Response Passenger Trips

PASSENGER TRIPS PER REVENUE HOUR

In 2019, Roseville operated at an average of 2.32 passenger trips per revenue hour, higher than many other entities. In 2020, despite the challenges posed by the COVID-19 pandemic, Roseville's average passenger trips per revenue hour remained relatively strong at 2.17, reflecting the adaptability and resilience of the city's transit system to maintain ridership levels. As a result of the ongoing pandemic-related disruptions and other factors unique to Roseville, Roseville's sum of passenger trips per revenue hour decreased from 2.17 in 2021 to 1.96 in 2022.

Comparatively, other entities, such as the County of Placer, consistently operated at higher passenger trips per revenue hour over the past three years. Union City and Yolo County Transportation District always had lower passenger trips per revenue hour, possibly indicating difficulties in optimizing resource allocation and ridership. In 2021, the Transit Joint Powers Authority for Merced County experienced a significant increase in passenger trips per revenue hour, suggesting that service provision or demand may have changed.

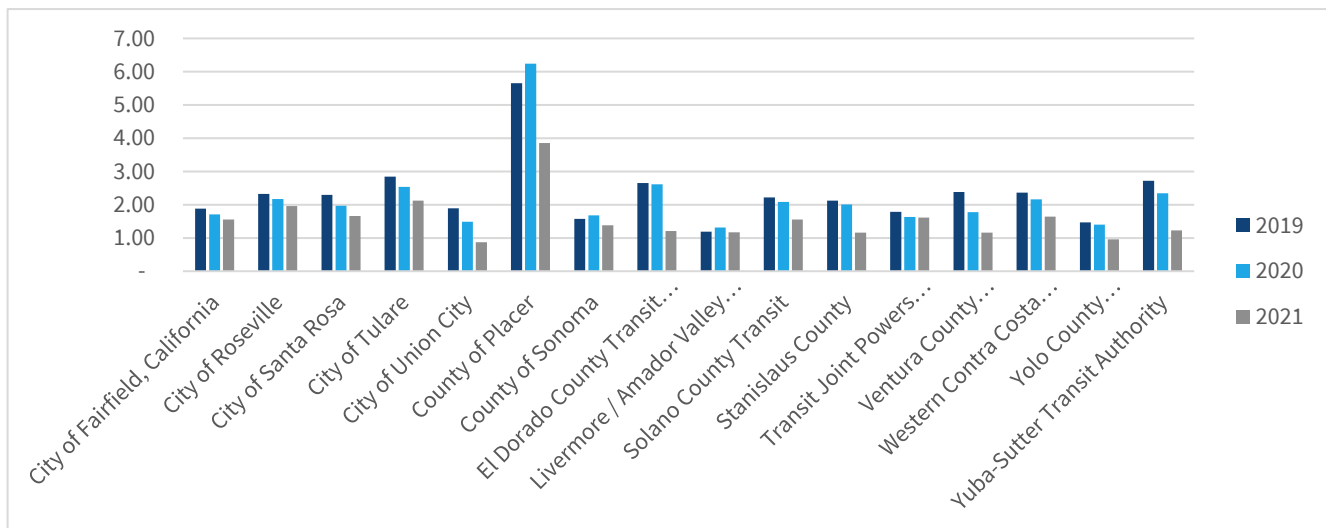


Figure 88 – Annual Demand-Response Passenger Trips per Hour (Mode Productivity)

DEMAND RESPONSE SERVICE OPERATIONS

REVENUE HOURS

Compared with other entities, Roseville recorded an average of 11,724 revenue hours in 2019. In 2020, Roseville's average revenue hours decreased to 10,258 due to effects resulting from the COVID-19 pandemic. In 2021, Roseville's average revenue hours were further reduced to 7,407 due to falling demand.

The City of Santa Rosa and the Livermore/Amador Valley Transit Authority, on the other hand, had significantly higher average revenue hours. The City of Tulare and the City of Union City consistently experienced lower average revenue hours, possibly due to more compact transit systems or less extensive service coverage. An increase in average revenue hours for the Transit Joint Powers Authority for Merced County was evident in 2021, suggesting an expansion or change in service provision.

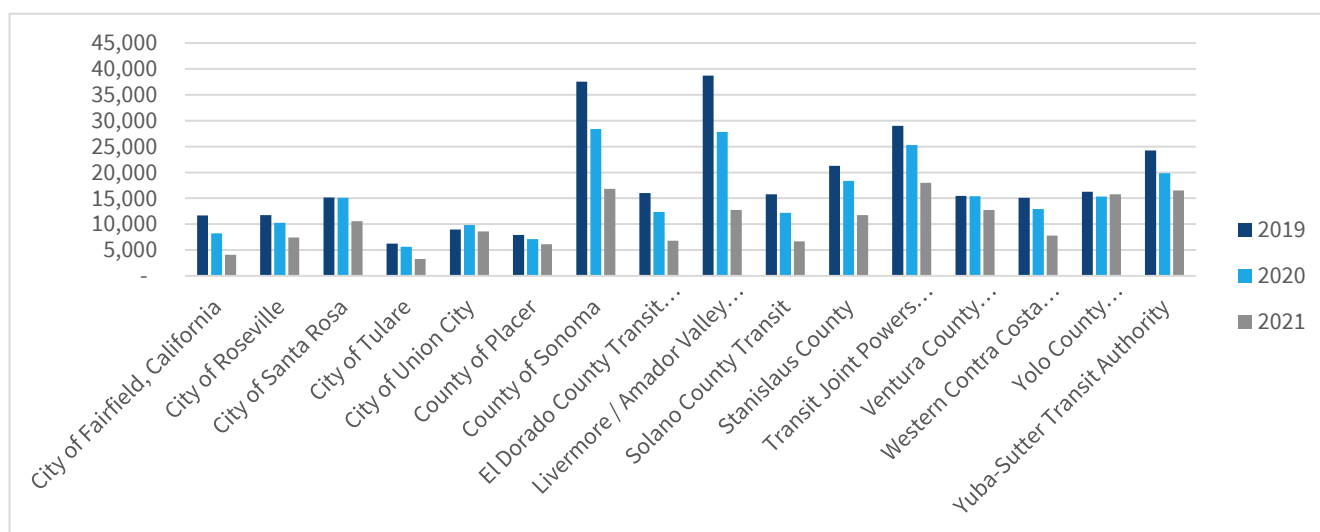


Figure 89 – Annual Demand-Response Revenue Hours

SPEED

Throughout 2019 to 2021, the City of Roseville experienced a marginal decline in its average speed, from 11.5 RM/RH in 2019 to 11.0 RM/RH in 2021. When compared to other entities, Roseville's speed was in the mid-range. For instance, the City of Fairfield and Santa Rosa consistently maintained average speeds above Roseville throughout the three years. On the other hand, the City of Union City exhibited a notable decrease, with speeds dropping to as low as 2.0 RM/RH in 2021, making it one of the slowest compared to all other sources. Contrarily, the County of Placer consistently outpaced all entities, including Roseville, with its speed peaking at 33.6 RM/RH in 2020. Most authorities, like Roseville, showed a general trend of reduced speeds over the three years.

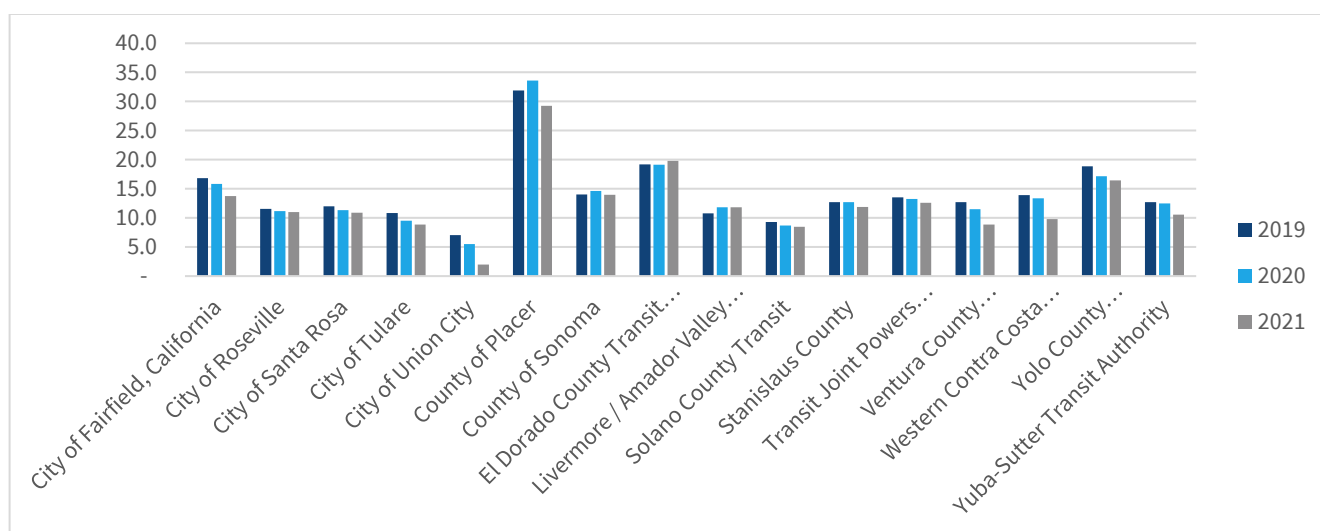


Figure 90 – Annual Demand-Response Revenue Miles

When measuring how efficient a transit operation is, we generally look at outcomes compared to cost. These outcomes include ridership, operating capacity, etc. Between 2019 and 2021, the City of Roseville saw a steady increase in its average operating expense per passenger trip, starting at \$49.15 in 2019, rising to \$56.73 in 2020, and reaching \$62.39 in 2021. In comparison to other entities:

The City of Fairfield and the El Dorado County Transit Authority recorded significantly higher expenses, with Fairfield reaching a notable \$173.06 by 2021, while El Dorado's expenditures peaked at \$174.13 in the same year.

The City of Santa Rosa and the City of Tulare had expenses starting lower than Roseville in 2019 but saw increases over the years. By 2021, Santa Rosa's expenditures stood at \$67.30, and Tulare's at \$80.73.

The City of Union City and the County of Placer began with expenses around Roseville's range in 2019 but experienced substantial hikes, especially in 2021, with Union City reaching \$130.27 and the County of Placer soaring to \$147.76.

Livermore/Amador Valley Transit Authority and the Ventura County Transportation Commission consistently remained below Roseville's expenses throughout the three years, with the latter having one of the lowest expenses at \$66.27 in 2021.

The Yolo County Transportation District consistently recorded higher expenses than Roseville, peaking at \$123.86 in 2021.

Most other entities, including the County of Sonoma, Solano County Transit, and Stanislaus County, started around or slightly above Roseville's 2019 figure but exhibited varied growth rates, with some surpassing Roseville's 2021 expense and others remaining below.

In general, while Roseville experienced a gradual increase in its operating expenses, several other entities observed sharper hikes, especially in 2021.

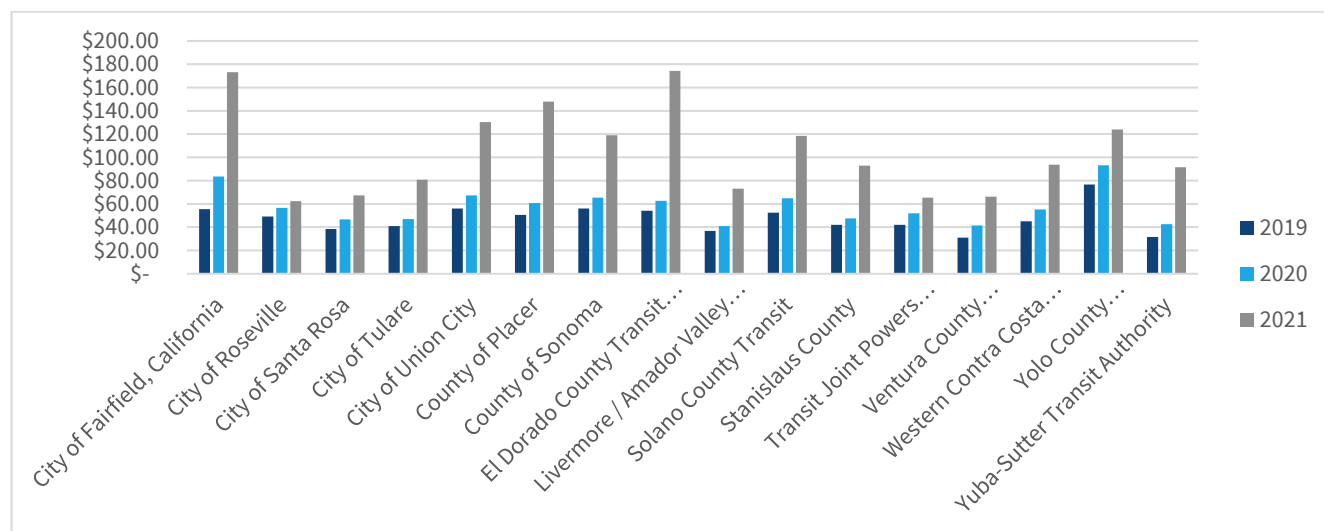


Figure 91 – Annual Demand-Response Cost per Passenger Trip

COVID-19 IMPACTS ON TRANSIT SERVICES

COVID-19 and the following stay-at-home orders heavily impacted Placer and surrounding counties. While much of the riding public can now telecommute, we are beginning to understand how COVID-19 has shifted demographics and the pandemic's overall effect on travel patterns.

When looking at overall mobility trends in the counties, retail visits are at or above pre-COVID levels. This is in line with the rest of California and the U.S.

Nationwide, transit ridership remains significantly below pre-pandemic levels and has been trending downwards for the past few months.

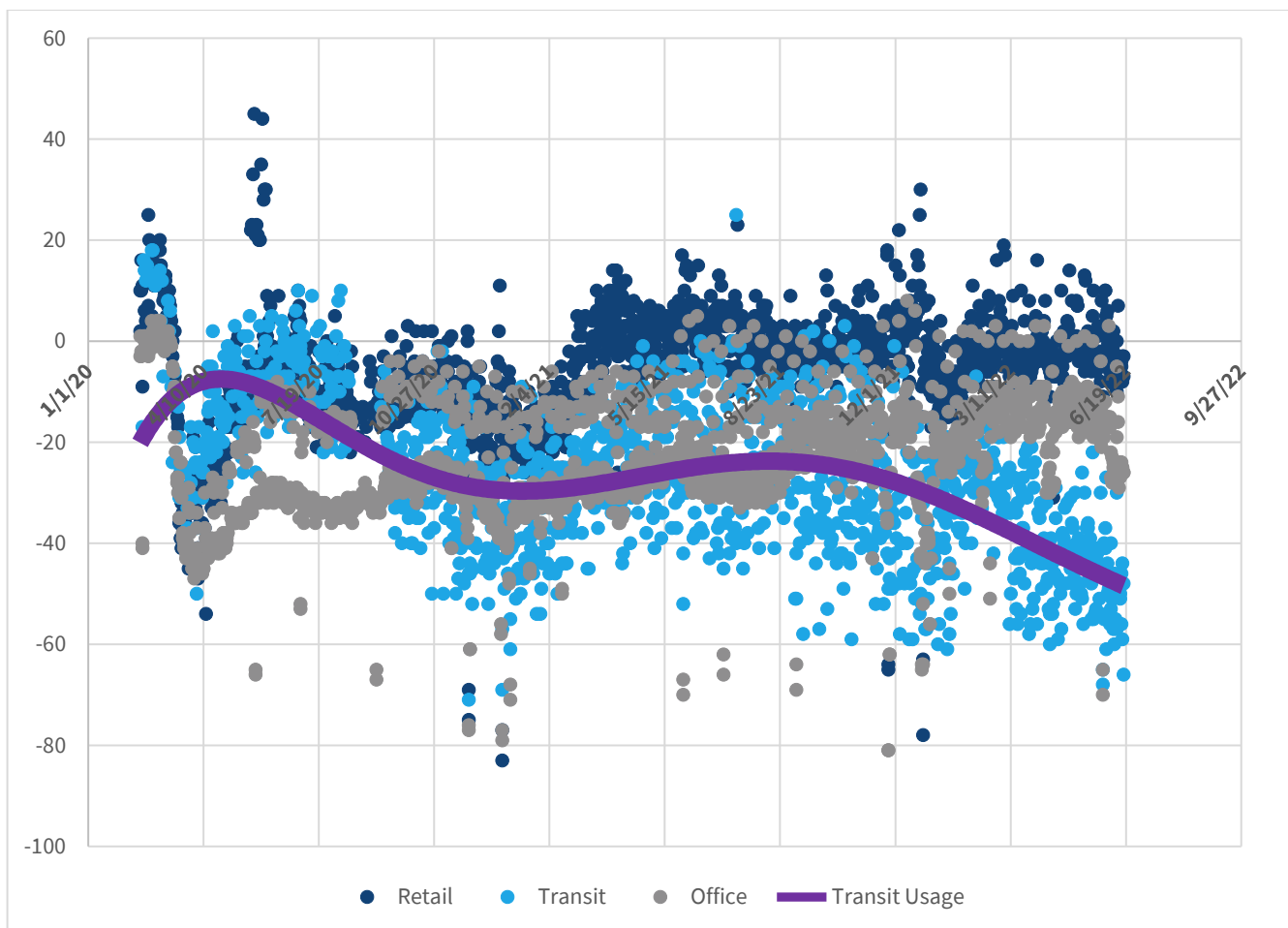


Figure 92 - Pandemic Mobility Trends (Google data)

Ridership Decline: The immediate impact of the pandemic in 2020 was a significant drop in daily ridership, attributed to lockdown measures, work-from-home policies, and general public hesitation.

Financial Impact: Fare collections took a direct hit, but operating expenses didn't see an equivalent reduction due to the constant costs associated with vehicle maintenance, staff salaries, etc.

Service Adjustments: Transit authorities likely reduced service frequency and operated fewer routes, especially in low-demand areas or regions with strict lockdown measures.

Safety Protocols: Sanitation and safety became paramount. Measures might include mask mandates, providing sanitizers, limiting passenger numbers, and frequent vehicle disinfections.

Digital Shift: A significant trend was the rapid adoption of digital solutions. Passengers shifted towards online ticketing, digital payment platforms, and using apps to track bus/train timings to minimize waiting times and contact.

The following analysis is for typical transit systems averaging 10,000 riders a day and not for Roseville Transit specifically.

Metric	Pre-pandemic (2019)	Pandemic Onset (2020)	Recovery Phase (2021)	Analysis
Average Ridership	10,000 daily	4,000 daily	6,500 daily	A sharp decline of 60% in ridership during the onset, with a partial recovery of 65% in 2021.
Fare Collection	\$50,000 daily	\$18,000 daily	\$30,000 daily	Fare collection dramatically dropped due to reduced ridership and fare relief initiatives.
Operating Expenses	\$40,000 daily	\$35,000 daily	\$38,000 daily	Despite the drop in ridership, operating expenses remained high due to fixed costs.
Service Frequency	Every 10 minutes	Every 30 minutes	Every 20 minutes	Service frequency was reduced during the pandemic to match the lower demand.
Safety & Sanitation	Basic	High	Enhanced	Increased emphasis on cleanliness and safety measures, with regular disinfection introduced.
Digital Adoption	20%	50%	65%	More riders adopted digital payment and tracking methods to reduce contact.

Financial Review and Cost Allocation Model

OVERVIEW

The City of Roseville's COA aims to provide Roseville Transit with a set of service changes, administrative and operational improvements, and an overall roadmap for modernization for the next ten years. To properly understand the revenue plan, this section describes the current funding sources utilized by the Department compared with operating expenses and how they have changed over time. A fully loaded cost allocation plan has been created as part of the COA. This plan includes the ability to conduct scenario planning and can help forecast revenue needs and provide the impact of lost revenue.

OPERATING COSTS

Roseville Transit experienced notable changes in operating costs, revenue hours, revenue miles, and passenger trips across its three modes - Fixed Route, Commuter, and Dial-a-Ride - over the years, with significant impacts due to the COVID-19 pandemic starting in 2020.

Fixed Route:

Operating Costs: These costs generally increased yearly, with a peak in 2020 followed by a decline in 2021.

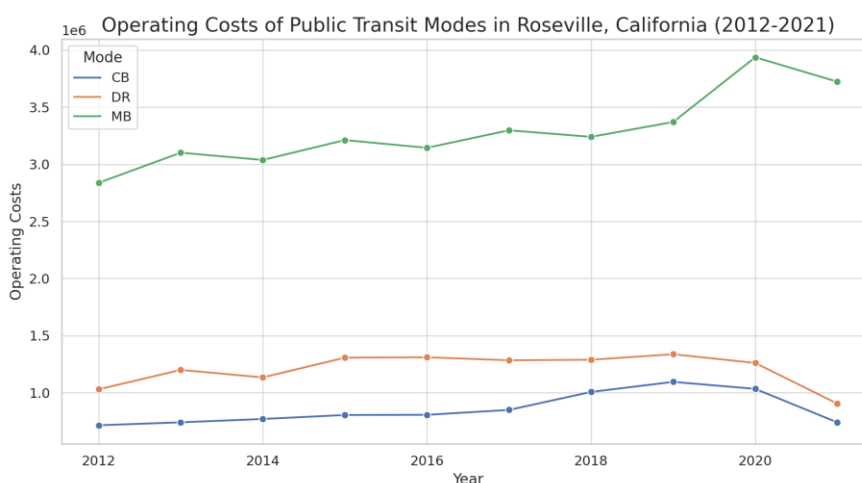


Figure 93 - Operating Costs by Year by Mode

Revenue Hours and Miles: Both showed a trend of gradual increase until 2020, with a slight drop in 2021, likely due to pandemic-related service reductions.

Passenger Trips: The data shows fluctuations, with the numbers generally following revenue hours and miles trends.

Commuter:

Operating Costs: Costs rose steadily until 2019, followed by a decrease in 2020 and 2021, coinciding with the pandemic.

Revenue Hours and Miles: These also decreased significantly in 2020 and 2021, reflecting reduced service levels due to the pandemic.

Passenger Trips: Similar to the other factors, ridership dropped, especially in 2020 and 2021.

Dial-a-Ride:

Operating Costs: Costs fluctuated, with the highest in 2019, followed by declines in 2020 and 2021.

Revenue Hours and Miles: Both experienced reductions in 2020 and 2021, in line with the overall decrease in service.

Passenger Trips: Ridership trends mirrored these changes, with a noticeable decrease during the pandemic years.

Overall, Roseville Transit experienced a steady, upward trend in operating costs, revenue hours, revenue miles, and passenger trips across all its modes until approximately 2019. This growth, characterized by incremental year-over-year increases, was abruptly disrupted by the COVID-19 pandemic in 2020. The pandemic precipitated significant reductions in service, as evidenced by the marked decrease in revenue hours and miles. This contraction in service provision is directly correlated with a substantial decline in ridership across all transit modes. The pandemic's effects extended to operating costs, which also saw a notable decrease during the same period. This trend reversal, from consistent growth to a sudden downturn, underscores the profound impact of the pandemic on public transit operations in Roseville and across the nation.

OPERATING REVENUES

Roseville Transit's most recent 10-year capital and operations plan anticipates modest increases for FY 22/23, followed by no further increases in this funding for the plan's duration. Much of Roseville Transit's operating revenue comes from Federal Transit Administration (FTA) sources. Like many transit systems across the United States, Roseville Transit received one-time funding through the CARES Act during the pandemic to help mitigate losses from reduced ridership, extraordinary pandemic-related costs, and the suspension of fares on certain services. As a smaller operator, Roseville Transit also benefits from Small Urban and Rural operating funding from the FTA, categorized under two formula sections, 5307 and 5311.

The remainder of Roseville Transit's revenue is sourced through a formula from the California Transit Development Act (TDA). This includes State Transit Assistance (STA) and the Local Transportation Fund (LTF). Unlike FTA funding, STA funding is projected to increase by an average of 15% per year over the next decade. The LTF portion is derived from a quarter-cent of the general sales tax collected statewide, while State Transit Assistance comes from a portion of the gasoline and diesel fuel sales tax. Consequently, TDA funds are susceptible to economic downturns, which might occur in 2024. For instance, STA funds experienced an average drop of 12% annually from FY 20 onwards. Modeling scenarios developed for the COA will consider potential state and federal funding levels reductions.

Table 7 - Revenue Sources

Revenue Source	2022 Funding	2021 Funding
Federal Transit Administration Operating Grants	\$2,090	\$1,990
Local Transportation Fund	\$2,496	\$2,377
State Transit Assistance Fund (operating)	\$1,314	\$1,252
Advertising	\$125	\$119
Other Revenues	\$55	\$52
Fares	\$402	\$1,071
Total	\$6,483	\$6,174

COST ALLOCATION MODELING

It is critical to properly forecast costs and revenues, as well as ridership, as part of the COA. To do so, the project team has built a cost allocation model. The cost allocation model divides Roseville Transit's annual operating costs into fixed and variable criteria. Fixed costs are those that the department will incur regardless of the level of service it operates. These are what we call "keeping the lights on" expenses. Variable costs are broken into per hour costs and per mile costs and ebb and flow based on service levels. This separation of expenses will be useful when costing out recommendations and building scenarios. As Roseville Transit contracts its operations out to MV, contracted expenses are recorded as variable, per-hour costs. As is the case in the majority of these contracting situations, MV is reimbursed on a per hour rate with a smaller fixed monthly fee, and thusly if Roseville were to reduce its operating hours, MV's rate would decrease. There are contractual guidelines preventing a large reduction in hours, however, this project is not considering these types of reductions and as such the expenses are listed as purely variable.

FIXED COSTS

Using Roseville Transit's general ledger expenses combined with the audited financials for the prior three years, the following items are included in the Department's fixed costs.

Table 8 - Fixed Expenses

Expense Category
SALARIES/WAGES/BENEFITS

In FY 21/22 these expenses account for approximately \$764,550 of Roseville Transit's annual operating budget.

VARIABLE COSTS

The remainder of the operating expenses are considered variable. The largest portion of these expenses are resulting from MV's operations contract. As stated above, variable costs are broken into a per hour cost and a per mile cost in order to correctly capture the variable most likely to generate costs. For example, maintenance and fuel are per mile expenses.

Table 9 - Variable Expenses

Expense	Variable Per Hour	Variable Per Mile
Maintenance		X
Fuel		X
Other Maintenance		X

For FY 21/22, Roseville Transit is estimating \$3.4 million expenses that are considered variable per hour expenses and \$2 million per mile variable expenses.

SCENARIO PLANNING

As part of the COA, Roseville Transit is considering three financial scenarios.

- **A marginal (5-10%) increase in inflation-adjusted operating costs**
- **An unconstrained financial plan**
- **A cost neutral plan**

The cost allocation model allows for incorporating all of these scenarios and has built sensitivities into the model to determine the impact on ridership from each scenario. For example, what would the resulting service hours be if revenue levels were to drop? And how much could ridership drop due to reduced service hours? The model also includes additional sub-scenarios based on non-transit market factors that will influence Roseville Transit's decision-making over the next decade. These sub-scenarios include:

- Service Increases and Decreases
- Fare Changes
- Population Changes
- Employment Changes
- Gas Price Increase or Decrease
- Work From Home Changes
- Quality of Service Improvements
- Income Changes

Each of these variables has been shown to have an impact on transit riders

Base			
Assumptions			
	Per Hour	Per Mile	
Fixed Route	\$ 76.02	\$ 3.53	
Dial-A-Ride	\$ 69.11	\$ 3.22	
Commuter	\$ 105.44	\$ 2.90	
Variables	Hours	Miles	Passengers
Fixed Route	32,630	413,308	111,970
Dial-A-Ride	8,723	109,916	17,250
Commuter	4,681	100,049	24,244
Total	46,033	623,273	153,464
Expenses			
Administrative	\$ 802,778	\$ 20.84	
Operations	\$ 3,576,884		
Maintenance	\$ 2,102,948		
Total	\$ 6,482,610		
Revenue			
Federal	\$ 2,089,959		
State & Local (TDA)	\$ 3,810,396		
Miscellaneous	\$ 179,442		
Fares	\$ 402,812		
Total	\$ 6,482,610		
Service Level +/-	-	0%	
Cost per Hour	\$ 140.83	0.0%	
Productivity	3.33	0.0%	

Figure 94 - Scenario Planning Example

APPENDIX

HISTORY & OVERVIEW OF THE CALIFORNIA TRANSPORTATION DEVELOPMENT ACT

In 1971, Governor Ronald Reagan and the California Legislature passed the Transportation Development Act (TDA) to provide a stable, long-term source of funding to counties for transit and non-transit related purposes. The bill, known as SB-325 or the Mills-Alquist-Deddah Act, improves existing public transportation services through a regional transportation plan.

The TDA has two major funding sources, the Local Transportation Fund (LTF), created in 1972 and the State Transit Assistance fund (STA), established in 1980. The LTF is derived from a 1/4-cent general sales tax and the STA is derived from sales tax on diesel fuel. Some counties can use LTF for local streets and roads projects if all transit needs are met. The STA Fund may not be used to fund administration, streets, or roads projects. The TDA marked the first instance in which the state used the sales tax, rather than an excise tax, to fund transportation.ⁱ To date, SB 325 generates annual revenues of \$1.8 billion for public transportation in California.

Four entities are responsible for implementing the TDA: The state government, Regional Transportation Agencies/local government, Transportation operators and Public Works departments.

TRANSPORTATION DEVELOPMENT ACT FUNDING: LTF & STA

Through the LTF and STAF, the Transportation Development Act (TDA) provides two major sources of funding for public transportation: The Local Transportation Fund (LTF) and the State Transit Assistance fund (STA). These funds are for the development and support of public transportation needs that exist in California and are allocated to areas of each county based on population, taxable sales and transit performance. Some counties have the option of using LTF for local streets and roads projects, if they can show there are no unmet transit needs. The Transit Programs Branch provides oversight of the public hearing process used to identify unmet transit needs. It provides interpretation of and initiates changes or additions to legislation and regulations concerning all aspects of the TDA. It also provides training and documentation regarding TDA statutes and regulations. The branch ensures local planning agencies complete performance audits required for participation in the TDA.ⁱⁱ

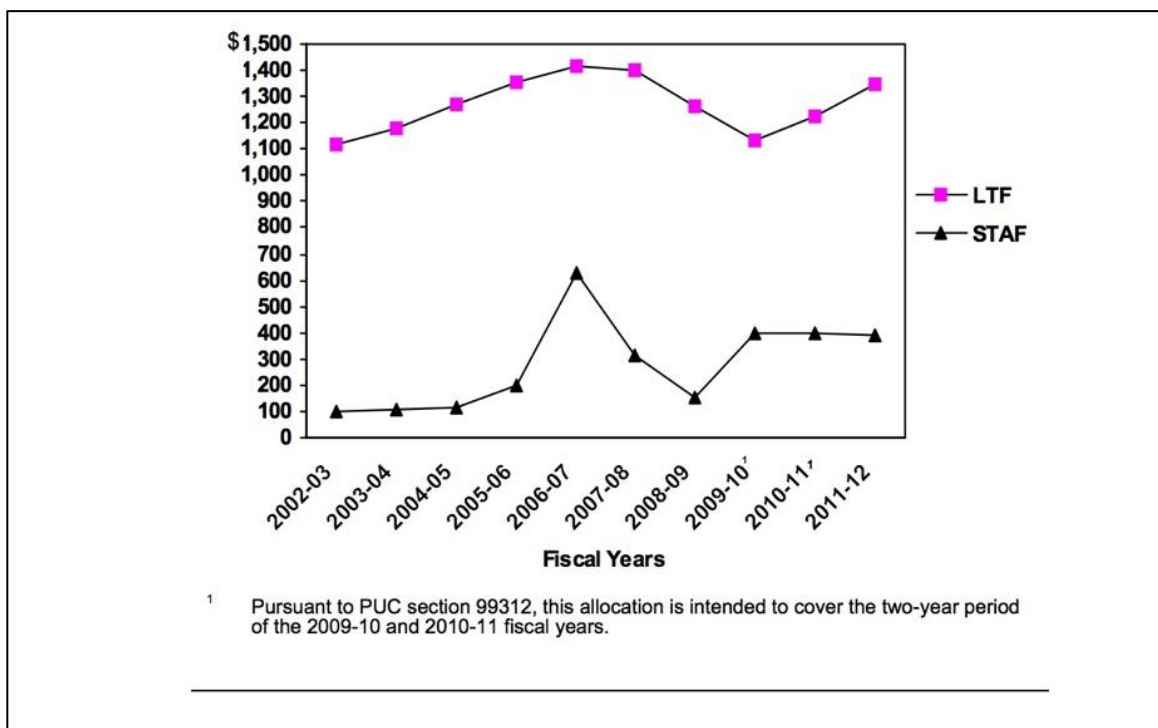


Figure 95 - LTA and STA Funding Comparisons

LOCAL TRANSPORTATION FUND (LTF)

LTF revenues are derived from 1/4 cent of the base 7.25% retail sales tax collected statewide. The State Board of Equalization returns the 1/4-cent to each county according to the amount of tax collected in that county.

LTF funds are distributed through a three-step process: (1) apportionment, (2) allocation, and (3) payment. One step does not always imply or require the next. Annually, the Transportation Planning Agencies (TPAs) determine each area's share of the anticipated LTF. This share is the area apportionment. Once funds are apportioned to a given area, they are available only for allocation to claimants in that area. Allocation is the discretionary action by the TPA, which designates funds for a specific claimant for a specific purpose. Payment is authorized by allocation instructions issued by the TPA, which may call for payment in a lump sum, in installments, or as funds become available.

STATE TRANSIT ASSISTANCE FUND (STA)

The State Transit Assistance (STA) program was created in 1979 and provides a second source of TDA funding for transportation planning, public transportation, and community transit purposes. Unlike LTF, STAF funds may not be allocated to fund administration, streets, roads, or pedestrian/bicycle facility purposes.

Planning and Development account. The money is appropriated to the State Controller for allocation by formula to each regional planning entity.

The formula is split into two equal funding areas: 50% of the funds for a Population-Based STA, calculated from the ratio of the population versus the entire state, and the remaining 50% is allocated according to the prior-year proportion of regional transit operator revenues compared with statewide transit operator revenues. STA allocations are deposited in each regional entity's STA fund. The process for allocation and payment of funds from the STA fund is similar to that for LTF.

REGIONAL TRANSPORTATION PLANNING AGENCIES & GOVERNING STRUCTURE

Every county in California is served by a regional transportation planning agency according to California law. RTPAs are known locally by several titles: local transportation commissions, county transportation commissions, councils of government, and associations of government. Counties with urbanized areas over 50,000 people also have Metropolitan Planning Organization (MPOs) to guide regional transportation planning. By law, both MPOs and RTPAs are required to develop an Overall Work Program (OWP) and regional transportation plan (RTP). Examples of these RTPAs are the Sacramento Area Council of Governments (for Yuba and Sutter Counties), as well as the Fresno Council of Governments and the Southern California Association of Governments.

Both the LTF and STA funding are administered by these RTPAs, which are better equipped to identify and address local transportation needs, conduct planning, assist local governments, and support the statewide transportation planning process in non-metro regions of California. States are provided the opportunity to designate RTPAs as a method for formalizing the engagement of officials from areas with a population size less than 50,000 as they incorporate rural transportation needs in the statewide transportation planning process.ⁱⁱⁱ



Figure 96 - MPO and RTPAs in California

In California, there are currently 44 RTPA, 18 of which are MPOs (with 50,000 people or more) or exist within MPO boundaries. The other 26 designated RTPAs have populations of less than 50,000 people. These regional agencies are responsible for planning, coordinating, and administering federal, state, and local funds that enhance their region's multimodal transportation network.

As of 2013, California has 482 incorporated cities and 58 counties; each local government has Department over their roads, streets, and land-uses within their jurisdictional boundary. Local governments and transit operators nominate transportation projects for funding to their regional transportation planning organizations. County transportation authorities are responsible for developing expenditure plans for self-imposed, voter-approved, local sales tax measures.

REQUIREMENTS FOR LTF AND STA FUNDING

Funding from the LTF is a three-step process: (1) apportionment, (2) allocation, and (3) payment. Apportionment is the required division of available funds by population to jurisdictions within each county (cities and unincorporated portions of the counties). Once funds are apportioned to a given jurisdiction, they are available only for allocation to claimants for that jurisdiction.

Allocation is at the discretionary responsibility of the respective RTPA, who designates funds for a specific claimant for a specific purpose. Payment is authorized by the allocation instructions, which may call for payment in a lump sum, in installments, or as funds become available. Interest earned by SACOG on the moneys allocated to a claimant does not accrue to the project, but only accrues to the local transportation fund to be apportioned to future projects.

PERFORMANCE MEASUREMENTS

To ensure program compliance among TDA funding recipients, fiscal and performance audits are conducted on different schedules. Fiscal audits are conducted on an annual basis. They include transit operator's expense-to-revenue ratio, known as farebox recovery. These are to ensure the fairness and accuracy of the financial statements retrospectively.

Performance audits are conducted every three years and analyze performance measures that verify the efficiency and effectiveness of California's planning agencies and transit operators. Both fiscal and performance audits are conducted by entities designated by the transportation planning agency (other than itself), a county transportation commission, or an operator.^{iv}

The California Department of Transportation receives copies of the performance audits of all RTPAs. Additionally, the Department receives certification from each Regional Transportation Planning Entity that required performance audits have been completed for all transit operators under the Entity's jurisdiction. According to state law, all RTPAs should receive and present to their governing boards, not only their own performance audit, but also the performance audits of all transit operators under their jurisdiction. The audit report should also be presented to the officials of each audited entity and be made available to the public.^v

While operators that receive funding under Article 4 of the TDA are required to have a performance audit, those claimants that receive funding under Article 4.5 or Article 8 are not statutorily required to have a performance audit, although it is encouraged that they do so.

The performance audit evaluates the efficiency, effectiveness and economy of the entity's according to the Comptroller General's "Standards for Audit of Governmental Organizations, Programs, Activities and Functions Programs." The performance audits must be conducted on a triennial (every three years) basis according to the schedule established by respective RTPA having jurisdiction over an operator.

Performance audits of an operator providing public transportation services includes the following performance indicators:

- Operating cost per passenger
- Operating cost per vehicle service hour
- Passengers per vehicle service hour
- Passengers per vehicle service mile
- Vehicle service hours per employee

CONSEQUENCES OF FAILING REQUIREMENTS

The State Controller's Office will not authorize any payment to a regional entity that is delinquent in its submission of a state transit assistance fund fiscal audit report.

The TDA orders that in the case of an operator or transit service claimant failing to maintain, for a fiscal year, the ratio of fare revenues to operating cost required (for Roseville Transit this figure is 14.6%), and if it is not the first year for which the claimant has failed to maintain that ratio which is considered the one-time grace year, the claimant's eligibility to receive Transportation Development Act funds would be determined as follows:

1. In the fiscal year that the claimant fails to maintain the required ratio, known as the “noncompliance year”, there is no change in eligibility.
2. In the subsequent fiscal year or determination year there is no change in eligibility, however the audited amount of the difference between the required and actual fare revenue to operating cost ratio as reported in the claimant's fiscal and compliance audit for the fiscal year for which the required ratio was not met must be determined.
3. In the third or penalty year, the operator's or transit service claimant's eligibility to receive monies from the local transportation and state transit assistance funds shall be reduced, for one year only, by the amount of the difference between the required fare revenues and the actual fare revenues for the fiscal year that the required ratio was not maintained.
4. A claimant subject to the penalty in this section shall demonstrate to the transportation planning agency, the county transportation commission.

i

A short history of transportation funding

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What is a Regional Transportation Planning Agency?

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System Analysis

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EXECUTIVE SUMMARY

This comprehensive analysis of travel patterns in Roseville, encompassing all-day travel and segmented by specific time periods (AM peak, midday, and PM peak), provides a multifaceted view of the city's mobility landscape. By dissecting travel patterns both spatially across different quadrants and temporally throughout the day, we've gained valuable insights into the rhythms of urban movement that define Roseville's character and inform its transportation needs.

ALL-DAY TRAVEL PATTERNS

The all-day analysis revealed a balanced distribution of travel within and between the city's quadrants, with notable corridors of movement highlighting the interconnectedness of Roseville's urban fabric. Key travel routes, particularly between the North East and South East quadrants, were identified as critical arteries supporting the city's daily mobility.

AM PEAK PERIOD

The morning rush (8 am to 10 am) showed concentrated travel patterns, with significant movement along the Northeast to South East corridor, reflecting the commute to work and school. This period underscored the need for efficient transportation solutions to manage the influx of morning traffic and ensure timely commutes.

MIDDAY PERIOD

The midday analysis (10 am to 3 pm) illustrated a more distributed mobility pattern, indicative of a variety of activities, including errands, leisure, and business engagements. The diversity in travel purposes during this period highlighted the versatility of Roseville's transportation network in accommodating a wide range of midday movements.

PM PEAK PERIOD

The evening peak (3 pm to 7 pm) mirrored the morning's concentrated travel corridors but with an increase in intra-quadrant travel within the North East. This shift towards evening commutes and return journeys home emphasized the importance of managing traffic flows and ensuring the availability of efficient public transit options to ease congestion during this busy period.

KEY FINDINGS

- **Dynamic Mobility Landscape:** Roseville's urban mobility is characterized by dynamic shifts in travel patterns, with concentrated commutes during peak periods and more varied movements during the midday.
- **Critical Corridors:** The North East to South East travel corridor emerged as a vital route across all time periods, necessitating focused attention to infrastructure improvements and traffic management.
- **Intra-Quadrant Variability:** Intra-quadrant travel, especially within the Northeast, highlighted the quadrant's role as a significant hub for both residential and commercial activities, underscoring the need for localized transportation planning.

IMPLICATIONS FOR URBAN PLANNING

The insights garnered from this analysis underscore the necessity for a holistic approach to urban and transportation planning in Roseville. Tailoring infrastructure and services to the nuanced patterns of daily travel can enhance the efficiency, sustainability, and resilience of the city's transportation network. Addressing the challenges identified in key travel corridors, optimizing routes and transit schedules to match peak demand, and ensuring the accessibility and convenience of intra-quadrant travel are crucial steps toward fostering a more connected and mobile Roseville.

INTRODUCTION

This analysis is conducted for the City of Roseville to enhance the understanding of public transit patterns within its urban area. Focusing on Roseville Transit, the city's primary transit system, the study aims to uncover critical insights into the flow of people through various transit nodes. Utilizing data collected between March and September 2023, the analysis encompasses different travel behaviors, providing an in-depth understanding of the transit dynamics specific to Roseville.

The primary data source is GPS and location-based data obtained from cell phone users within Roseville. This dataset offers a comprehensive view of movement patterns in the city, allowing for a detailed analysis of travel behaviors and usage of Roseville Transit. The precision of GPS data is invaluable in urban planning, offering accurate insights into the locations and movements of commuters and residents within Roseville.

METHODOLOGY

Custom algorithms were developed to match user locations accurately within Roseville's urban landscape. These algorithms form the backbone of our analysis, enabling us to detail where individuals are within Roseville and how they move, particularly concerning Roseville Transit. The study identifies significant points of interest and transit nodes, which are crucial for Roseville Transit planning and optimization by examining travel patterns by time of day and the duration spent at critical locations.

EMPHASIS ON PRIVACY AND DATA HANDLING

In line with the City of Roseville's commitment to privacy and ethical data practices, all collected data was rigorously disaggregated and anonymized. The analysis ensures individual privacy by removing personal identifiers and adhering to modern standards for data privacy and ethical data use. This approach ensures that the analysis respects individual privacy while providing valuable insights into the mobility patterns within Roseville.

INSIGHTS INTO URBAN MOBILITY IN ROSEVILLE

Integrating GPS data and our bespoke algorithms provides a unique perspective on urban mobility in Roseville. The analysis tracks individuals' time at various locations, shedding light on key points of interest and their interrelation with Roseville Transit.

This information is vital to understanding the demand for Roseville Transit and identifies potential areas for service enhancement, thereby improving urban mobility for the residents of Roseville.

CENTROID ANALYSIS

In our comprehensive study of Roseville's urban mobility, a pivotal element is the analysis of travel intensity through a 'centroid' lens. In this context, a centroid represents a focal point or hub within the city, typically a location of high travel activity or strategic importance. This section of the report delves into the nuances of patterns relating to these centroids, shedding light on the most intense travel locations in Roseville.

Understanding the dynamics of travel at these centroids is essential for multiple reasons. Firstly, it provides Roseville Transit with a clear picture of high-traffic areas, enabling targeted improvements in service where it's needed most. Secondly, it offers insights into the efficiency of current transit routes and stops, highlighting potential service gaps or optimization opportunities. Finally, this analysis serves as a foundation for future urban planning initiatives, guiding decisions that can enhance overall mobility and accessibility in Roseville.

APPROACH

Our approach to centroid analysis combines sophisticated data analytics with real-world insights. By analyzing aggregated and anonymized data from various sources, including GPS and cell phone location data, we identify critical patterns in how residents and visitors navigate the city. This analysis not only considers the volume of trips to and from each centroid but also looks at the intensity of these trips during different times of the day, thus offering a multi-dimensional view of transit patterns.

IDENTIFY HIGH-TRAFFIC CENTROIDS

This section of our analysis focuses on identifying and understanding the centroids in Roseville with the highest traffic volumes. This distinction is critical for Roseville Transit in optimizing service delivery and planning future expansions or improvements.

Methodology: Our analysis utilizes weighted trip intensity and the number of observations from the centroid intensity dataset. These metrics provide a clear perspective on which centroids are most and least frequented, thus indicating areas of high and low activity. In the analysis of public transit systems like Roseville Transit, weighted trip intensity is a crucial metric for understanding and assessing traffic distribution. Unlike simple trip counts, this metric provides a nuanced view of transit usage by accounting for the frequency and importance of trips, thereby offering a more accurate representation of demand. It's instrumental in identifying high-demand areas, which is essential for effective resource allocation and operational planning. By focusing on weighted trip intensity, transit authorities can optimize route efficiency, adjust service frequency to match actual usage patterns, and make data-driven decisions for urban development and infrastructure expansion.

Furthermore, weighted trip intensity plays a vital role in enhancing user experience. It allows transit services to be tailored to meet the real needs of commuters, improving satisfaction and potentially increasing ridership. This approach also helps identify overcrowding issues, ensuring that adjustments are made for a more comfortable and efficient commuting experience. Overall, the use of weighted trip intensity in transit analysis is key to developing a responsive, efficient, and user-centered public transit system.

GEOSPATIAL ANALYSIS

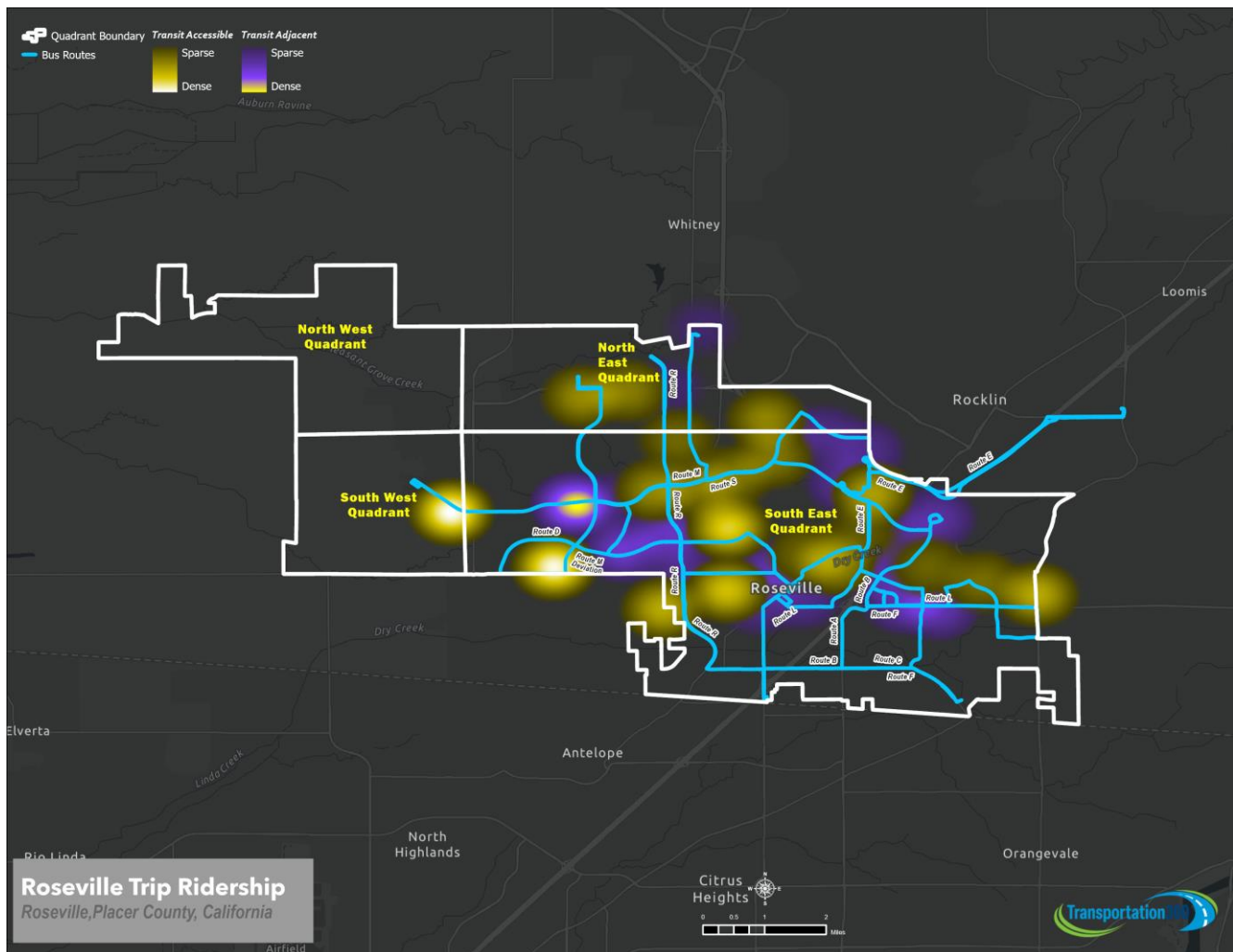
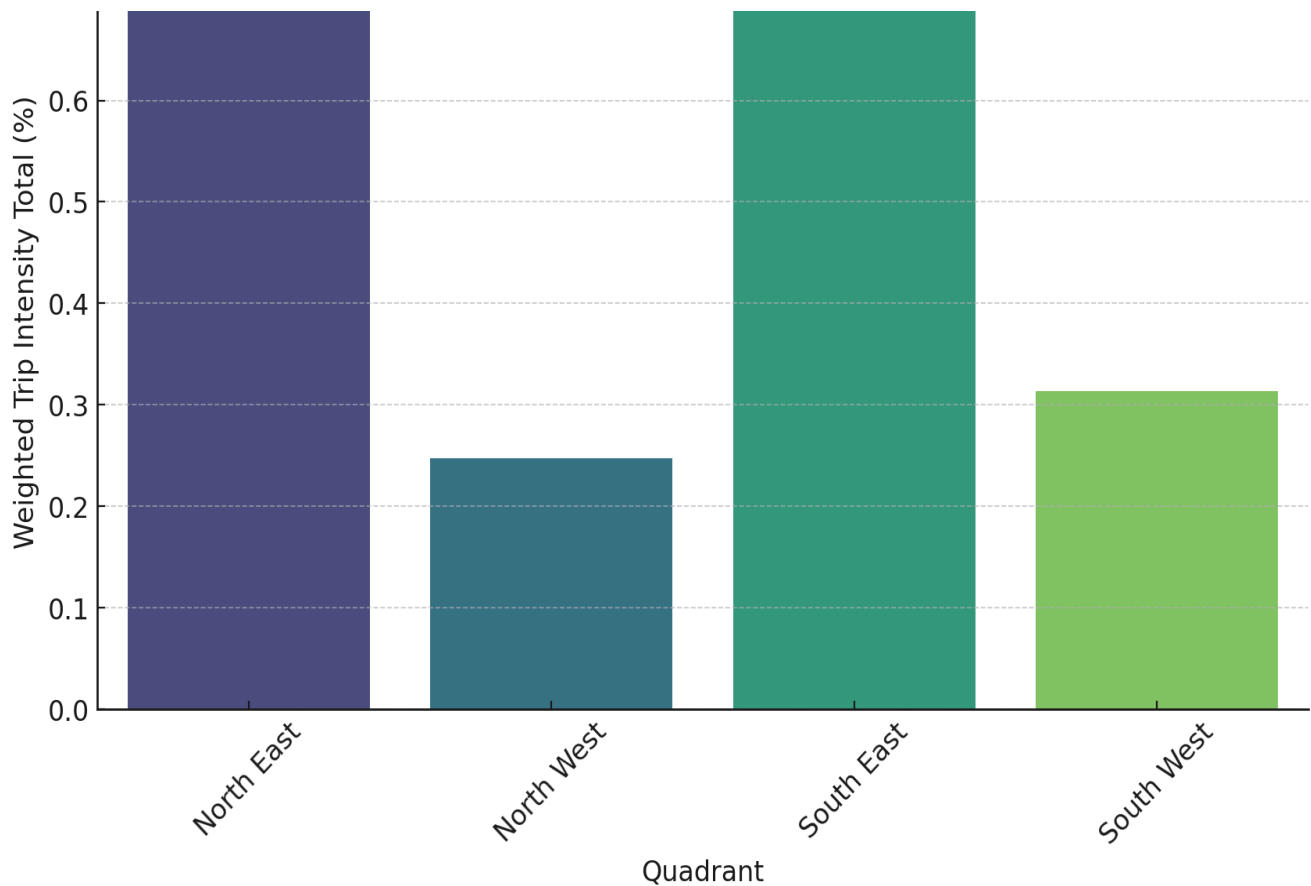


Figure 1 - Trip Activities Across Quadrants

The analysis shows a marked difference in the percentage of trip activities among the quadrants. For instance, if the "North East" quadrant accounts for 40% of the weighted trip intensity total, it underscores this quadrant's role as a primary destination or origin for trips within the analyzed area. Certain quadrants have emerged as significant contributors to the overall trip activity. Identifying the exact percentages helps quantify the extent of their contribution. For example, a 35% trip intensity in the "South West" quadrant indicates a substantial volume of travel, necessitating targeted infrastructural and service interventions.



- North East: 35.60% of the weighted trip intensity total, indicating this quadrant remains a significant hub for travel activity.
- North West: 12.35% of the weighted trip intensity total, showing an increase in activity compared to the previous center point.
- South East: 36.40% of the weighted trip intensity total, making it the quadrant with the highest trip activity, similar to the previous analysis but slightly adjusted due to the new center.
- South West: 15.65% of the weighted trip intensity total, reflecting a notable share of travel activity and an increase from the previous analysis.

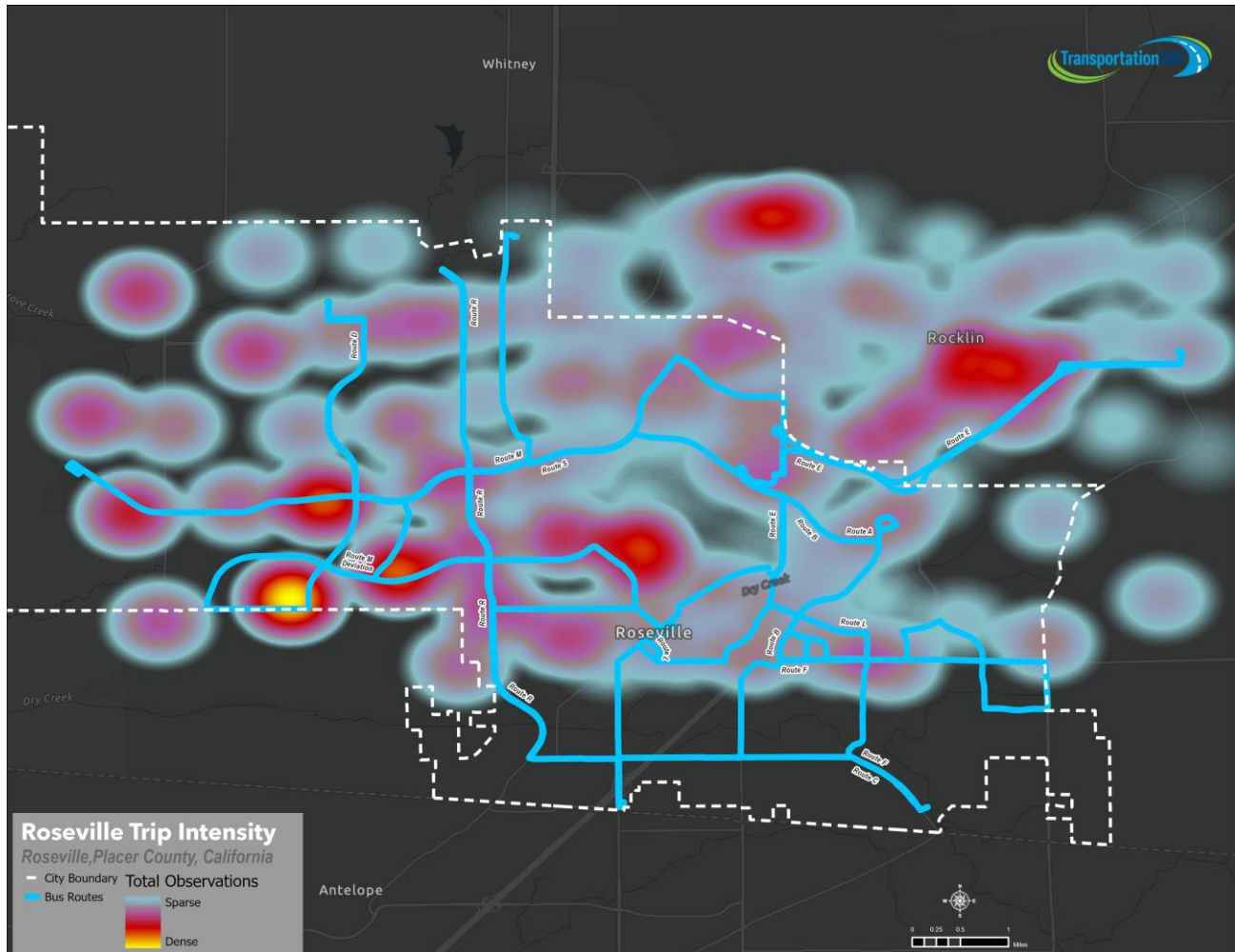


Figure 2 - Centroid Intensity

HIGHT TRAFFIC CENTROIDS

The top 25 centroids collectively account for a significant portion of the city's travel activity, representing approximately 95% of all trips. This high percentage underscores the strategic importance of these locations as focal points of travel and activity within Roseville. Each centroid exhibits unique characteristics in terms of travel intensity, distances, and durations, highlighting the diverse nature of these hubs.

The examination of the top 25 busiest centroids revealed a notable concentration in specific quadrants, reflecting key areas of travel activity within Roseville:

- The South East quadrant emerged as the most prominent, with 11 centroids ranking among the top 25. This suggests a high level of transit and travel demand in this area, potentially driven by commercial, residential, or cultural hubs.
- The South West quadrant accounted for 6 of the top centroids, indicating another significant area for travel within the city.
- The North East and North West quadrants contained 5 and 3 of the top centroids, respectively, highlighting these areas as lesser but still notable centers of travel activity.

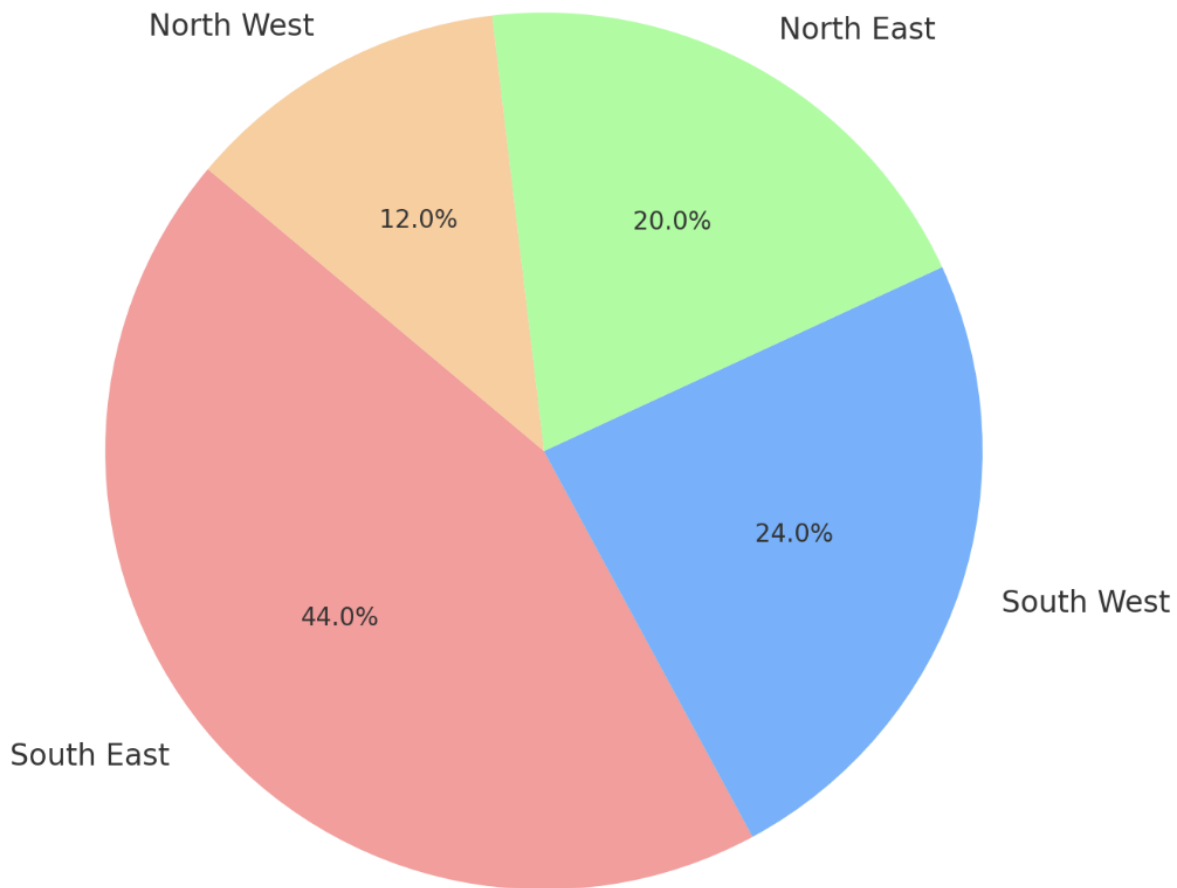


Figure 3 - Geographic Analysis of High-Traffic Centroids

The analysis of travel patterns to these key centroids provided insights into the typical distances and durations associated with trips in Roseville:

- The average mean distance traveled to reach these top 25 centroids was found to be approximately 4.57 miles. This metric reflects the spatial reach of Roseville's travel network and suggests that significant portions of the city are within moderate travel distance to these busy locations.
- The average mean duration of trips to these centroids stood at around 11.11 minutes, indicating a relatively efficient travel time within the urban landscape. This duration is a critical factor for public transit planning, as it impacts user convenience and the attractiveness of public transportation options.

The quadrant-based distribution and travel pattern analysis of Roseville's top 25 busiest centroids offers valuable insights for enhancing the city's public transit system. The concentration of travel activity in the South East and South West quadrants suggests these areas could be focal points for transit route optimization and service enhancements. Moreover, the moderate mean distances and durations to these centroids highlight the potential for making public transit a competitive and appealing choice for city residents.

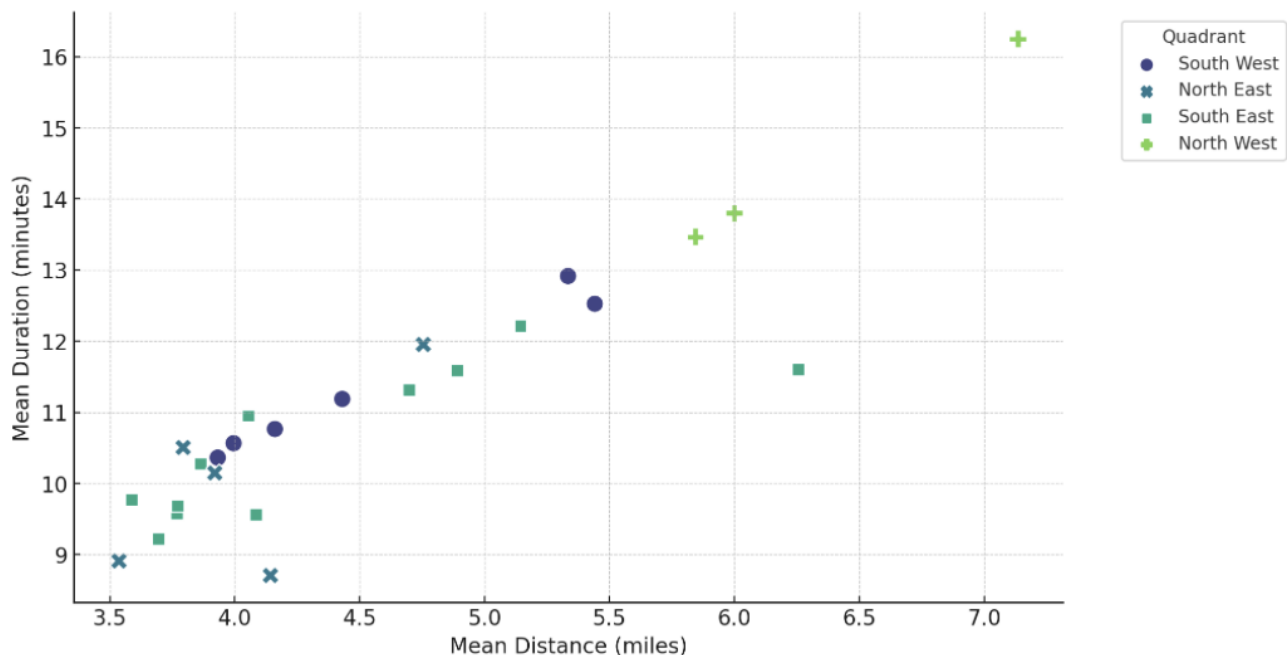


Figure 4 – Distance vs Duration by Centroid

TRAVEL DURATION ANALYSIS

The analysis of mean travel duration by quadrant in Roseville reveals distinct patterns of travel efficiency across the city, shedding light on the dynamics of urban mobility within its geographic confines. The bar chart visualization underscores the average travel times associated with each quadrant, offering a nuanced perspective on the spatial distribution of travel durations.

In the North East quadrant, the average travel duration portrays a scenario of moderate travel times, potentially indicative of a well-connected transit network and a balanced distribution of destinations that facilitate relatively swift movement. This area might exhibit a harmonious blend of residential, commercial, and recreational spaces, contributing to its moderate travel durations.

Conversely, the South East quadrant stands out with a higher average travel duration. This could suggest larger distances between key destinations within the quadrant or possible congestion points that extend travel times. The area might encompass expansive residential zones or major commercial hubs that attract significant traffic, thereby impacting overall travel efficiency.

The North West quadrant presents a different picture, with shorter average travel durations that hint at an efficient travel framework. This efficiency could stem from a compact urban design, strategic placement of transit routes, or fewer traffic impediments, facilitating quicker commutes and smoother transit flows.

Similarly, the South West quadrant exhibits relatively lower travel durations, akin to the North West. This efficiency could be attributed to effective public transportation options, well-maintained infrastructure, or the strategic location of amenities and services that minimize the need for extended travel.

Through this quadrant-based analysis of travel durations, a comprehensive understanding of Roseville's transit dynamics emerges. The variations in travel times across quadrants highlight the diverse urban fabric of the city, where each quadrant presents unique mobility characteristics. This analysis not only reflects the current state of travel within Roseville but also underscores the intrinsic link between urban planning, infrastructure development, and transit efficiency in shaping the city's overall mobility landscape.

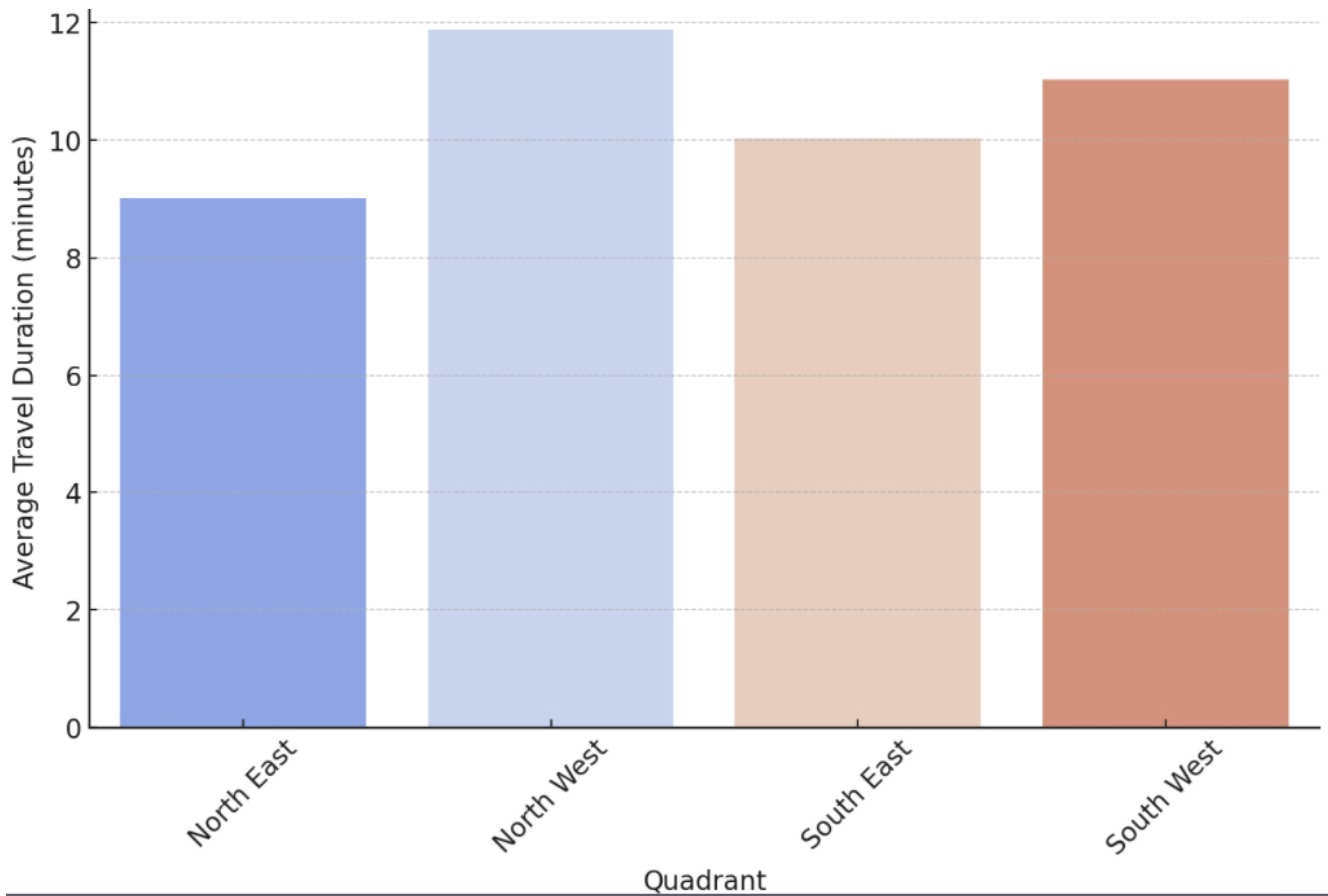


Figure 5 - Average Travel Duration by Quadrant

POINT OF INTEREST ANALYSIS

In a comprehensive analysis of the Points of Interest (POIs) surrounding the busiest locations in Roseville, a diverse range of POIs was categorized into distinct groups: medical, school, retail, residential, employment, and others. This categorization offers insights into the nature of areas that contribute to the busyness of these centroids.

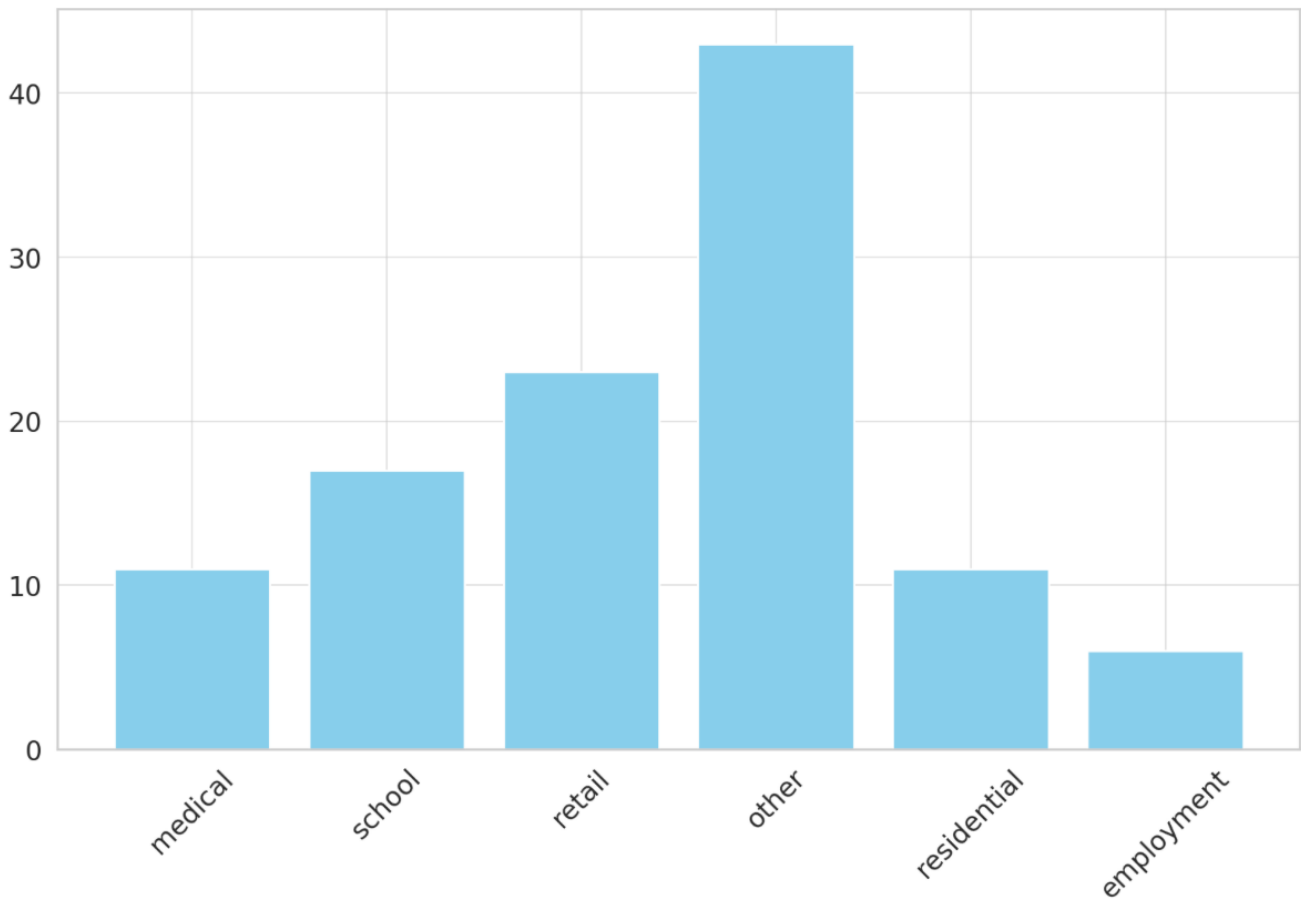


Figure 6 - Pols by Centroid

- **Medical Facilities:** The presence of medical-related POIs, such as clinics or hospitals, reflects the healthcare accessibility in certain areas. For example, centroids with POIs like "Waikiki Dentist" indicate local access to specialized medical services.
- **Educational Institutions:** School-related POIs, including schools, colleges, and universities, highlight the educational infrastructure. Centroids near institutions like "Sierra Vista Preschool" suggest areas frequented by students and faculty, contributing to traffic density.
- **Retail Establishments:** Retail POIs, encompassing stores, markets, and shopping centers, signify bustling commercial hubs. For instance, "Nugget Market" and "Panda Express" are indicative of shopping areas that attract significant footfall.
- **Residential Areas:** The categorization of residential POIs, including apartments and housing complexes, underlines residential sectors within the city. Centroids near residential complexes suggest areas with high living density, impacting local traffic patterns.

- **Employment Centers:** Employment-related POIs, such as business offices and companies, signal economic activity centers. The presence of company names among POIs points to business districts that likely experience regular employee commuting.
- **Other Categories:** This diverse category includes a range of POIs that do not fit into the aforementioned types, providing a glimpse into the unique and varied landscape of Roseville's busiest areas.

The distribution of these categories across different centroids paints a multifaceted picture of Roseville's urban landscape. For example, the concentration of retail POIs in certain quadrants suggests active commercial districts, whereas areas with a higher number of residential POIs might be predominantly living quarters with associated traffic during peak hours. Similarly, the clustering of employment-related POIs could indicate business districts with significant daily commuter traffic.

In summary, this analysis illustrates the varied nature of destinations surrounding Roseville's busiest locations and offers valuable insights for urban planning and traffic management. Understanding the types of POIs in these areas can aid in developing targeted strategies to manage congestion, improve public transportation routes, and enhance overall city infrastructure.

TRAVEL PATTERNS

The analysis of connecting centroids to trips in Roseville, CA, involves leveraging GPS and location-based data to understand travel patterns. This approach is mode-agnostic, meaning it considers travel regardless of the mode of transportation (such as driving, walking, biking, or public transit). Here's a summary of how this analysis works:

Each movement from one centroid to another is tracked and recorded using GPS and location-based data. This data provides a wealth of information about how people move around the city, capturing each trip's starting point and destination, the time taken, and the distance traveled. By analyzing these movements, we can identify common travel patterns, such as the most frequented routes, peak travel times, and popular destinations.

This mode-agnostic approach offers a comprehensive view of travel behaviors in Roseville. For instance, if a significant number of trips occur between "Northwestern 1" and "Northeastern 1", it suggests a strong connection between these areas, possibly due to various factors like work commutes, shopping, or other activities.

Grouping centroids into trips allows a deeper understanding of the city's travel dynamics. For example, certain centroids might predominantly be starting points, while others are primarily destinations. This information is invaluable for urban planning, transportation network design, and making data-driven decisions to improve traffic flow, enhance public transit systems, and facilitate efficient travel throughout Roseville.

SPATIAL MOBILITY ANALYSIS

The comprehensive analysis of travel patterns in Roseville, through the lens of intra- and inter-quadrant mobility, offers profound insights into the city's transportation dynamics. By meticulously linking centroids and analyzing trips based on their originating and destination quadrants, we've unveiled the fabric of urban travel that underpins daily life in Roseville.

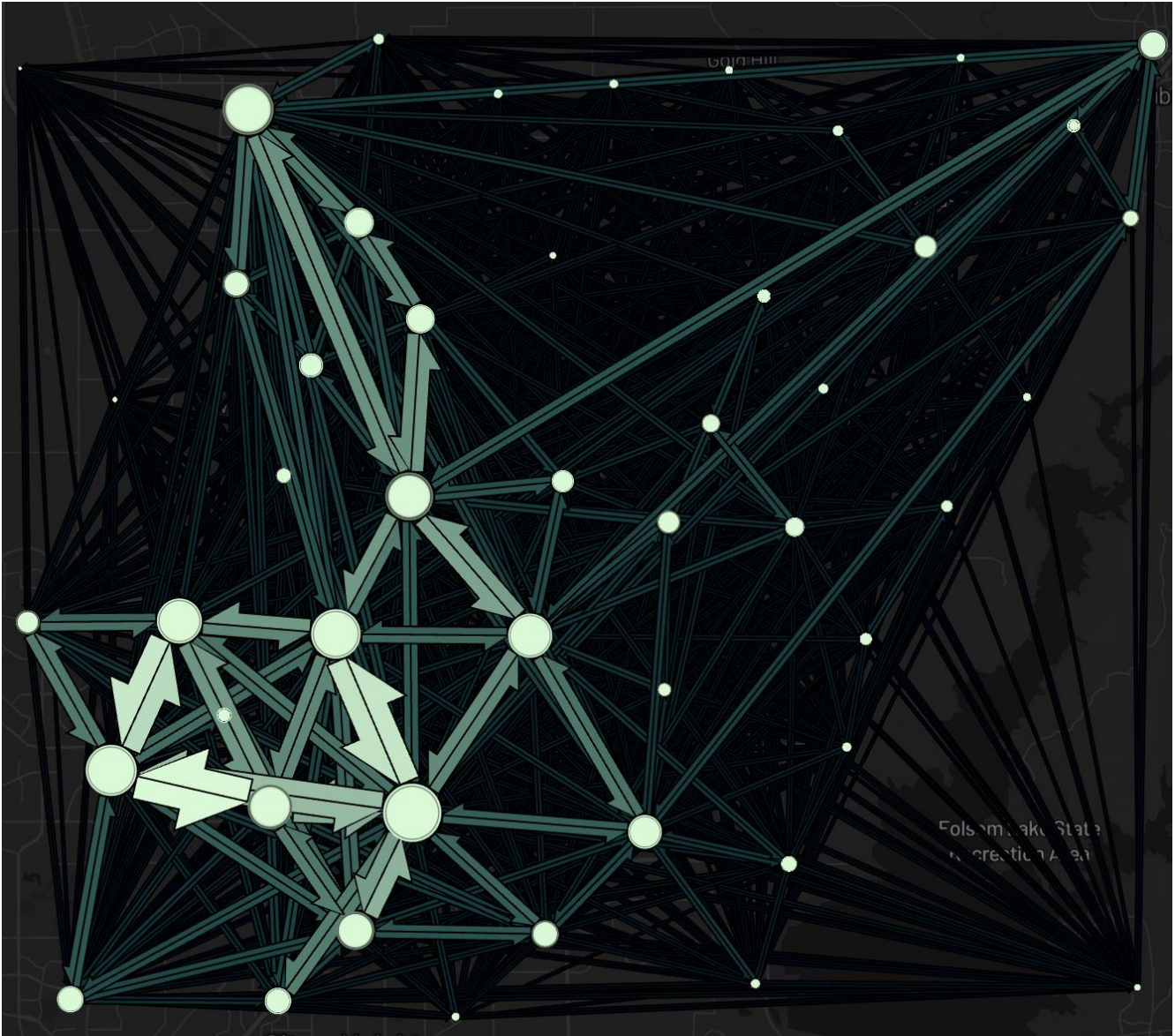


Figure 7 - All-Day Travel Patterns

INTRA-QUADRANT MOBILITY

- The North East quadrant sees a notable amount of self-contained travel, accounting for approximately 4.93% of total trips, with these trips averaging 7.44 miles in distance and 14.42 minutes in duration.
- The southeast quadrant also exhibits significant intra-quadrant movement, representing around 2.73% of trips, featuring an average travel distance of 6.58 miles and a duration of 13.51 minutes.

INTER-QUADRANT TRAVEL

- A key movement corridor is identified from the North East to the South East quadrant, comprising 3.82% of total trips, with an average distance of 6.85 miles and a duration of 13.73 minutes.
- Conversely, travel from the South East back to the North East accounts for 3.78% of trips, with these routes averaging 6.91 miles in distance and 13.92 minutes in duration.
- Movement between the North East and North West quadrants is also prevalent, with trips from North East to North West and vice versa making up 1.21% and 1.20% of total trips, respectively, and featuring similar average distances (around 6 miles) and durations (approximately 13 minutes).
- Trips from the South West to the North East constitute 1.15% of the overall travel, with an average distance of 7.32 miles and a duration of 14.13 minutes.

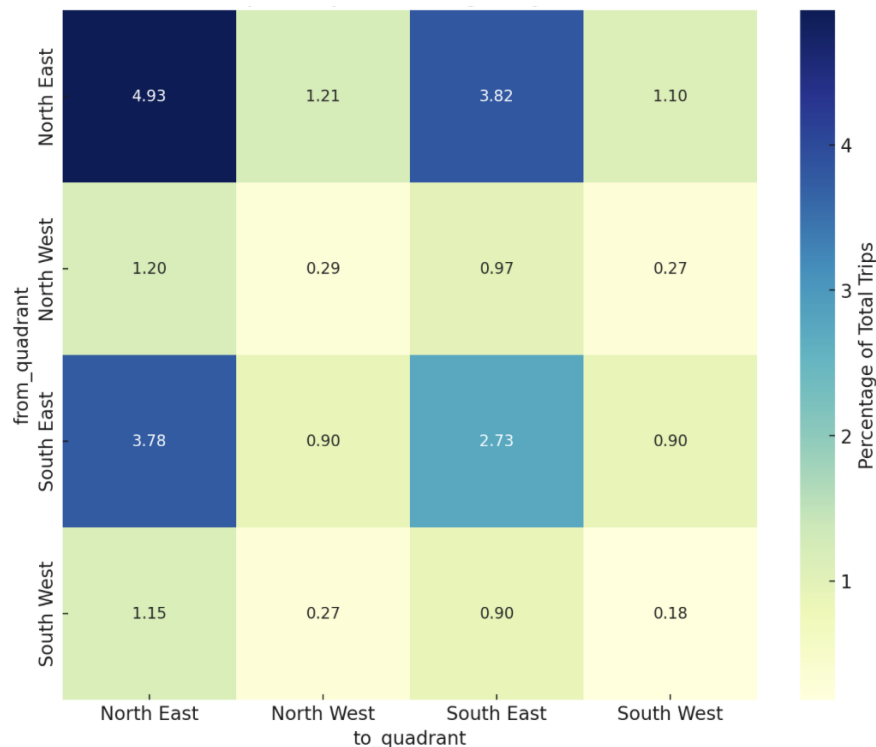


Figure 8 - Heatmap of Trip Percentages by Quadrant

This heatmap illustrates the percentage of total trips within and between each quadrant. The color intensity indicates higher percentages, highlighting the most traveled corridors, particularly between the North East and South East quadrants.

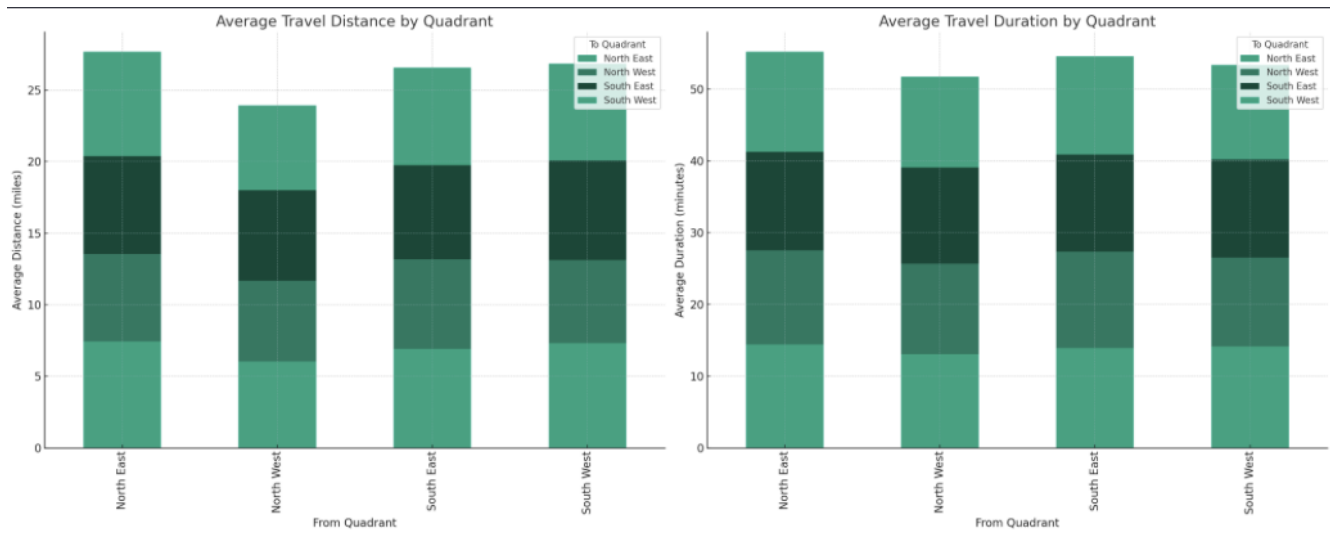


Figure 9 - Average Travel Distance and Duration by Quadrant

The chart for average travel distances showcases the comparative lengths of trips originating from each quadrant to others. It underscores the relatively longer distances associated with trips from the southwest to other quadrants, reflecting the geographical spread and the nature of travel patterns in Roseville. Consistent with the distances, the durations also highlight the prominence of travel between the Northeast and South East quadrants, with durations aligning closely with the distances traveled.

SPATIAL MOBILITY BY TIME OF DAY

To gain a comprehensive understanding of urban mobility in Roseville, it's essential to dissect travel patterns not only spatially but also temporally. This analysis delves into the intricate web of mobility by examining travel patterns during distinct time periods of the day: the AM peak (8 am to 10 am), midday (10 am to 3 pm), and the PM peak (3 pm to 7 pm). Each period offers unique insights into the rhythms of city life, influenced by the daily routines of its residents, the timing of business and school activities, and the ebb and flow of traffic congestion.

The dynamism of Roseville's urban travel landscape is vividly captured through a temporal lens, highlighting the shifting patterns of movement that characterize different parts of the day:

- **AM Peak:** This period captures the morning rush as residents embark on their commutes to work, school, or other early-day engagements. The analysis of this timeframe reveals concentrated travel corridors and preferences, shedding light on the most heavily utilized routes and the efficiency of the transportation network during morning high-demand hours.
- **Midday:** Spanning the late morning to early afternoon, the midday period encompasses a variety of travel behaviors, from errands and business meetings to leisure activities. This timeframe often sees a more distributed pattern of movement across the city, reflecting a diverse array of trip purposes beyond the typical commute.
- **PM Peak:** The evening peak encapsulates the return commute and the flurry of activities marking the end of the conventional workday. Analyzing travel during this period uncovers key insights into the routes that facilitate the homeward journey and the adjustments in urban mobility to accommodate the surge in evening traffic.

COMPARATIVE PERSPECTIVE

By juxtaposing travel patterns across these distinct time periods, we gain a nuanced understanding of how Roseville's mobility landscape evolves throughout the day. This comparison illuminates:

- **Concentrated vs. Distributed Travel Patterns:** The transition from focused travel corridors during the AM peak to a more evenly spread mobility landscape in the midday and back to concentrated routes in the PM peak reflects the city's adaptive travel dynamics in response to the daily routines of its inhabitants.
- **Temporal Shifts in Travel Dynamics:** The analysis highlights how average travel distances and durations vary from morning to midday to evening, offering clues to the changing nature of trips, from the purpose-driven morning commutes to the more leisurely midday excursions and the return commutes of the evening.
- **Quadrant-Specific Variations:** The temporal dissection of travel patterns also reveals how different quadrants of the city serve as origins, destinations, or transit points at various times of the day, informing targeted urban planning and transportation strategies.

This temporal analysis, enriched by the comparison of AM peak, midday, and PM peak periods, provides a holistic view of urban mobility in Roseville, CA. It underscores the importance of tailoring transportation planning and infrastructure development to meet the city's dynamic mobility needs, ensuring efficient, sustainable, and responsive urban travel.

AM PEAK

The AM peak period analysis underscores a shift in travel dynamics, with a noticeable concentration of trips along specific corridors, particularly from the North East to the South East quadrant. This pattern likely reflects the directional flow of commuters heading to work or school in the morning.

Both the travel distances and durations are optimized during the AM peak, highlighting the efficiency of morning commutes and possibly the impact of traffic management measures that facilitate smoother travel during high-demand hours.

- During the AM peak, travel patterns become more focused, with a slight shift toward the predominant North East to-South East corridor.
- Average travel distances and durations during the AM peak tend to be shorter, indicating more direct commutes.
- Intra-quadrant mobility, especially within the Northeast quadrant, decreases slightly during the AM peak, reflecting the outward flow of morning commutes.

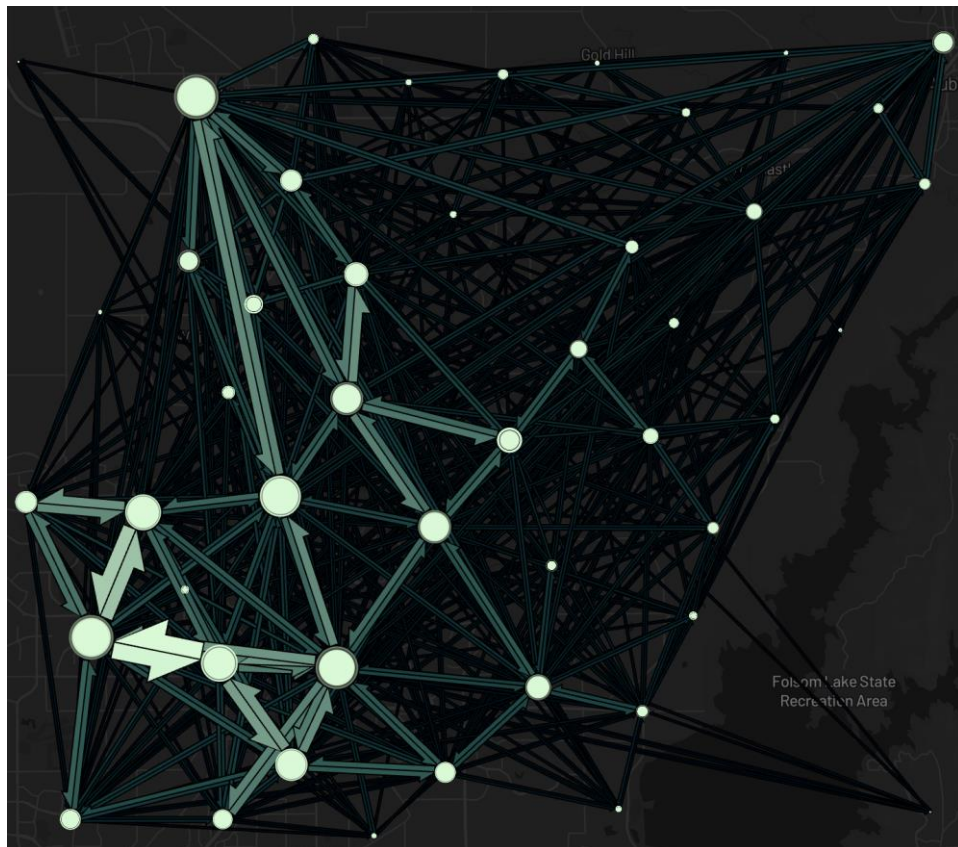


Figure 10 - AM Peak Travel Patterns

During the AM peak, the average distances and durations slightly decrease across most routes compared to the all-day data. For instance, the average distance for North East to South East travel is 5.60 miles with a duration of 11.85 minutes, showing a more condensed travel pattern likely due to the concentrated nature of morning commutes.

INTRA-QUADRANT TRAVEL

- The North East quadrant continues to exhibit a high level of self-contained mobility, with the percentage of intra-quadrant trips slightly decreasing compared to all-day data, reflecting the morning outward commute.

INTER-QUADRANT TRAVEL

- The predominant flow from the Northeast to the Southeast quadrant remains significant during the AM peak, constituting 3.99% of total trips, a slight increase in concentration reflecting the directional bias of morning commutes.

COMPARISON TO ALL-DAY DATA

The AM peak period shows a more concentrated pattern of travel, particularly in the direction of the Northeast to South East quadrant, which aligns with typical morning commute patterns to business or commercial districts located in these quadrants.

The distances and durations during the AM peak are generally shorter and quicker than the all-day averages, suggesting that morning commutes are more direct and potentially less impacted by midday or evening traffic variations.

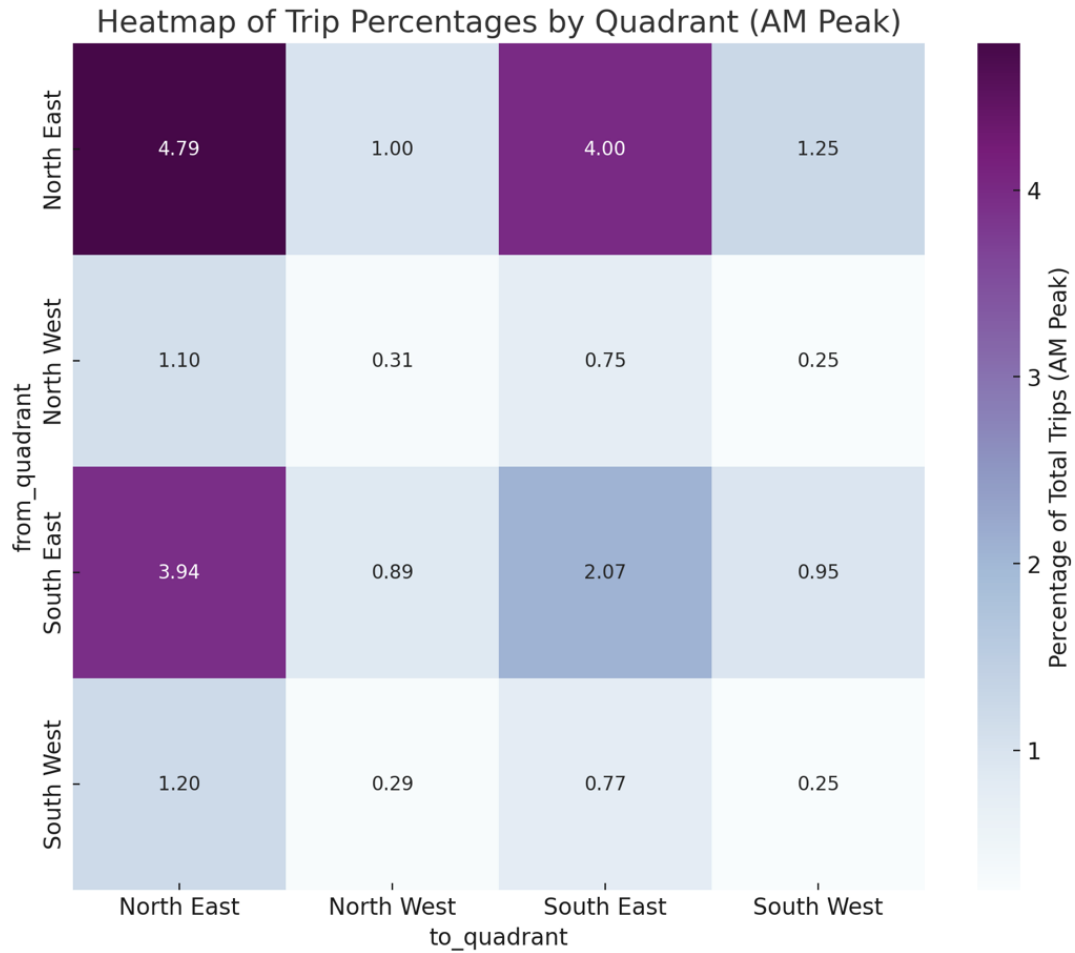


Figure 11 - Heatmap of Trip Percentages by Quadrant (AM Peak)

This heatmap presents the distribution of trip percentages during the AM peak period, with color intensity indicating higher percentages. It highlights the concentrated travel patterns during the morning commute, especially between the North East and South East quadrants.

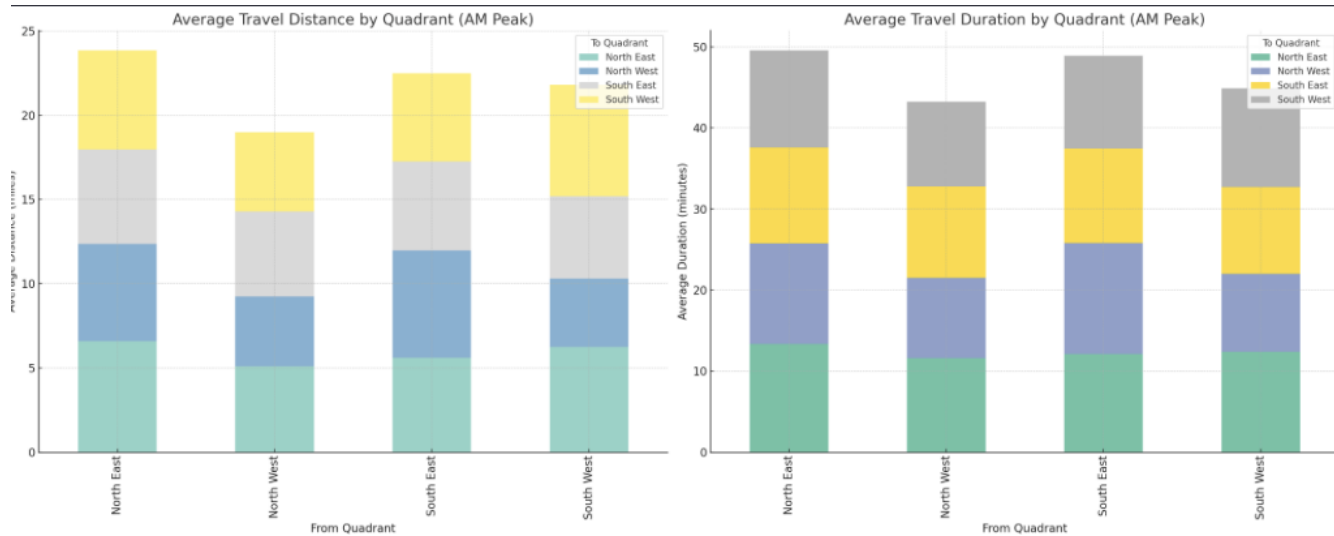


Figure 12 - Average Travel Distance and Duration by Quadrant (AM Peak)

The chart shows the average travel distances during the AM peak period, with different colors representing destination quadrants. It reveals that the travel distances are generally shorter during the AM peak compared to the all-day averages, indicating more direct routes taken during morning commutes. The durations are slightly shorter during the AM peak, suggesting quicker commutes, possibly due to less congested routes or more efficient travel choices in the morning.

MIDDAY

The midday analysis underscores a transition from the concentrated travel patterns of the AM peak to a more distributed and varied mobility landscape. This shift reflects the diverse nature of midday travel, which encompasses a wide range of activities beyond the typical work or school commutes.

The North East to-South East travel corridor remains significant but is complemented by a more uniform spread of intra- and inter-quadrant travel, highlighting the multifaceted nature of urban mobility in Roseville during the midday period.

- The midday period features a balance between intra- and inter-quadrant travel, with a slight emphasis on the North East to-South East corridor.
- Average travel distances and durations during midday are indicative of a broader range of trip purposes and destinations, not as tightly concentrated as the AM peak.
- The percentage of intra-quadrant travel in the North East quadrant increases slightly during the midday, reflecting a diversification in travel patterns as the day progresses.

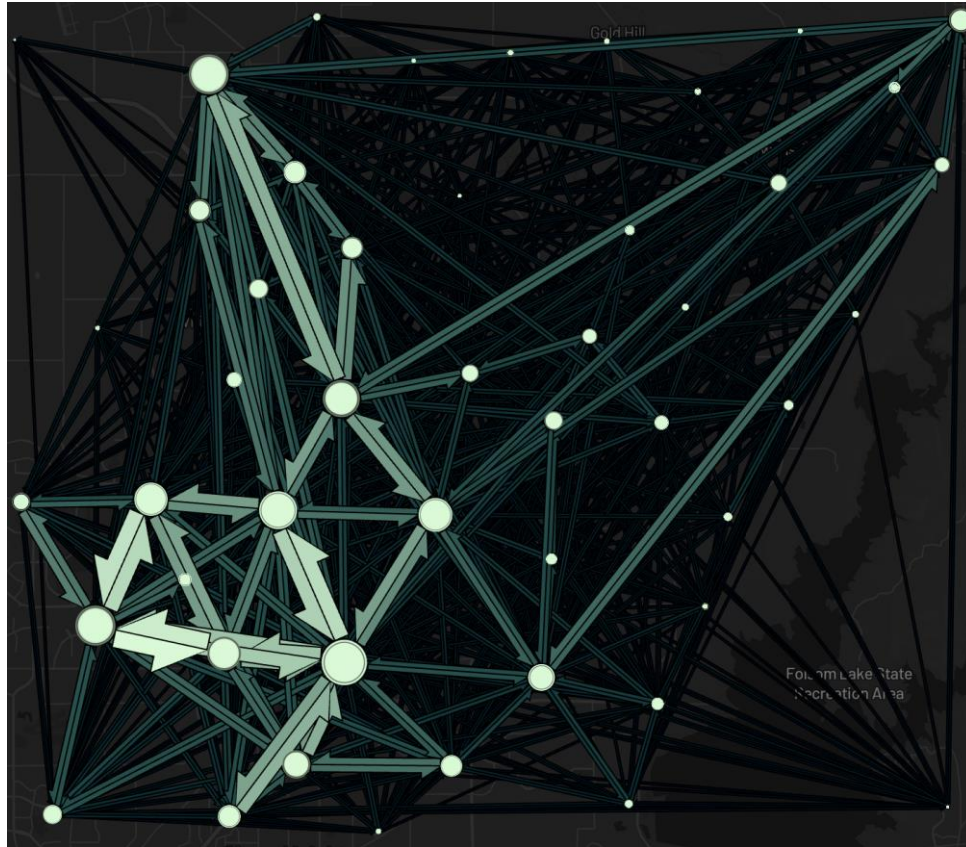


Figure 13 - Midday Travel Patterns

The average distances and durations during the midday period are similar to the all-day data but show slight variations when compared to the AM peak. For example, the North East to South East travel has an average distance of 6.46 miles and a duration of 13.15 minutes, indicating a spread in travel patterns post-morning rush.

INTRA-QUADRANT TRAVEL

The level of intra-quadrant travel in the Northeast slightly increases in percentage compared to the AM peak, suggesting a return to more distributed travel patterns within quadrants as the day progresses.

INTER-QUADRANT TRAVEL

The travel between the North East and South East quadrants remains a significant corridor, accounting for 3.90% of total trips during the midday period, slightly less concentrated than during the AM peak but still notable.

COMPARISON TO ALL-DAY AND AM PEAK DATA

The midday period shows a distribution of travel patterns that align more closely with the all-day data, indicating a return to a more balanced spread of mobility across the city after the morning peak.

Compared to the AM peak, the midday period sees a slight increase in both travel distances and durations, possibly due to a more relaxed pace of travel and less time-sensitive commutes.



Figure 14 - Heatmap of Travel by Quadrant (Midday)

This heatmap illustrates the distribution of trip percentages during the midday period, with color intensity indicating higher percentages. It reveals a balanced distribution of travel across the quadrants, with continued emphasis on the Northeast to South East corridor, albeit less pronounced than during the AM peak.

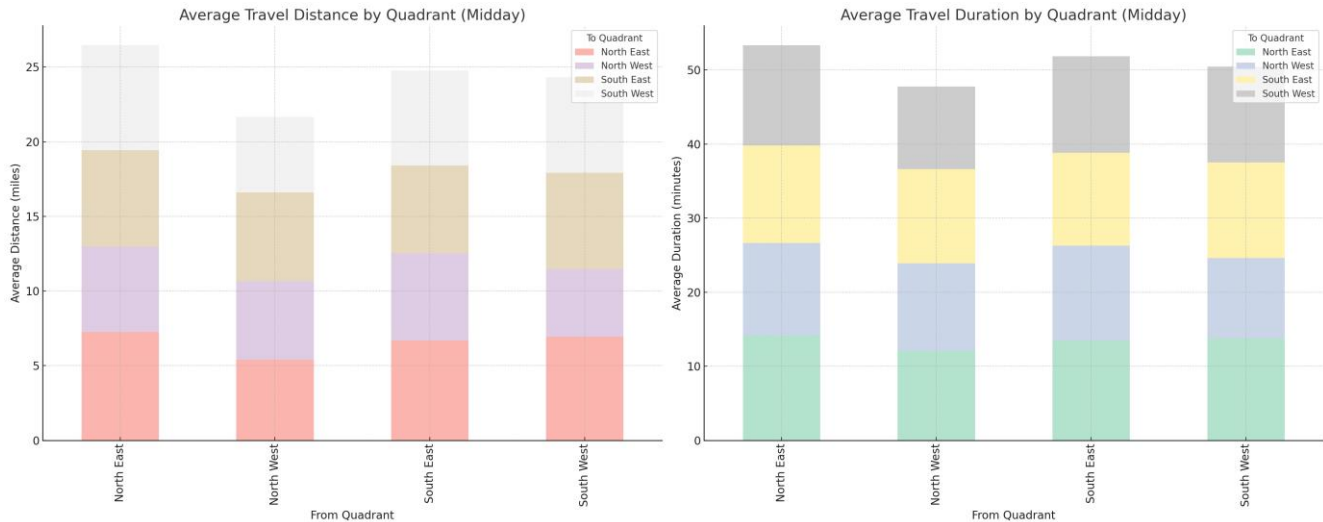


Figure 15 - Average Travel Distance and Duration by Quadrant (Midday)

The chart for average travel distances and durations during the midday period shows a slight increase compared to the AM peak, suggesting a broader range of destinations and trip purposes typical of midday activities, such as errands, leisure, or business meetings. Similarly, the chart for average travel durations indicates a moderate increase during the midday period, possibly reflecting a less hurried pace of travel and the impact of midday traffic patterns on travel times.

PM PEAK

The analysis of PM peak travel patterns in Roseville, CA (3 pm to 7 pm) offers insights into the dynamics of urban mobility as the day transitions from afternoon activities to the evening commute. This period is characterized by an increase in travel as residents return home from work or school and engage in evening activities.

- The PM peak period shows an emphasis on the North East to South East travel corridor, alongside a notable amount of intra-quadrant travel within the North East.
- Average travel distances and durations during the PM peak are indicative of the return commute and end-of-day travel patterns, with slight increases compared to the AM peak.

The percentage of intra-quadrant travel within the North East quadrant slightly rises during the PM peak, reflecting a pattern of residents returning to or consolidating travel within this area.

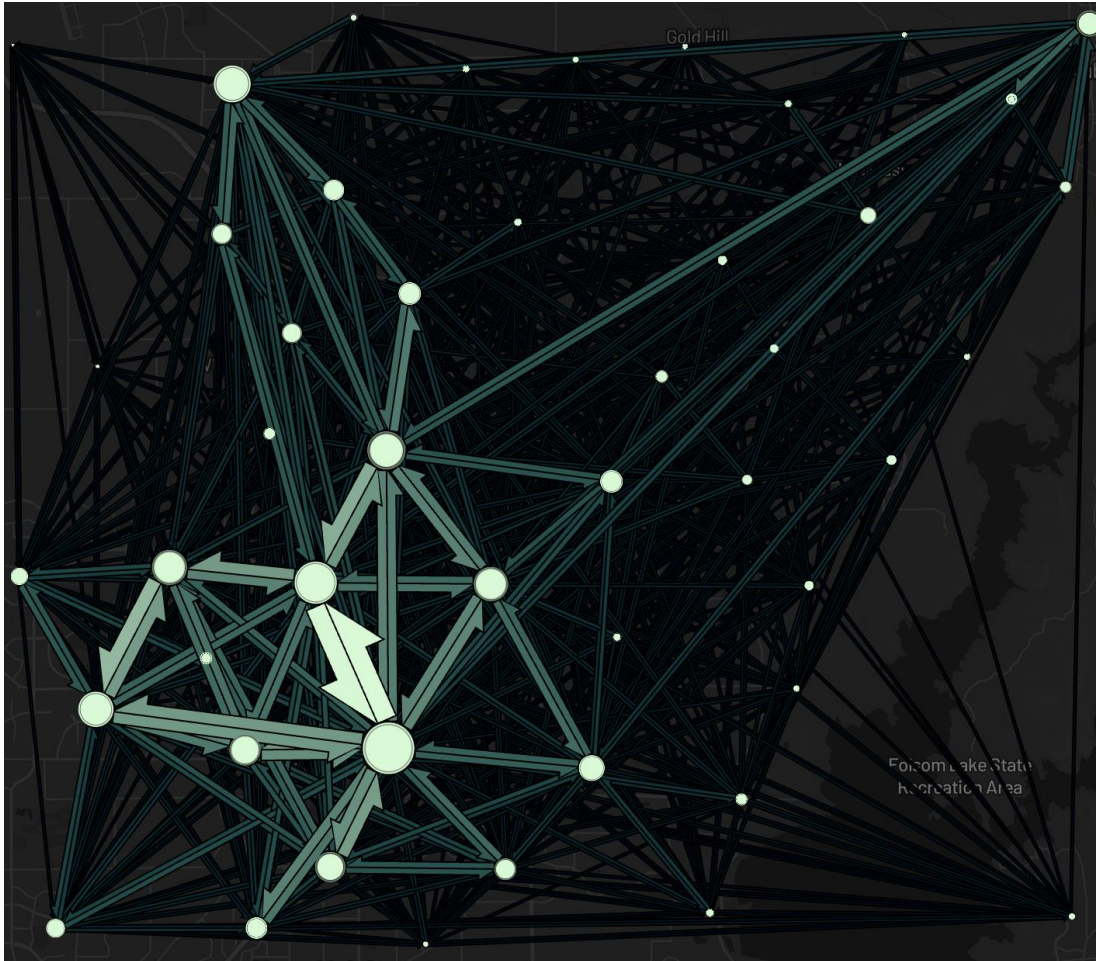


Figure 16 - PM Peak Travel Patterns

Similar to the midday period, the average distances and durations during the PM peak show a slight increase compared to the AM peak, with the North East to South East travel having an average distance of 6.14 miles and a duration of 12.72 minutes. This could reflect the return commute and other end-of-day activities.

INTRA-QUADRANT TRAVEL

The percentage of intra-quadrant travel within the North East quadrant slightly increases during the PM peak compared to the midday period, suggesting a consolidation of travel back into residential or central areas at day's end.

INTER-QUADRANT TRAVEL

The North East to South East corridor remains a significant travel route, accounting for 4.10% of total trips during the PM peak, slightly more pronounced than during the midday but less so than the AM peak.

COMPARISON TO OTHER TIME PERIODS

The PM peak analysis reflects a shift in travel patterns towards the evening commute, with an increase in travel from work and commercial areas back to residential zones or towards evening activities.

The distances and durations during the PM peak are comparable to the midday period, indicating a similar spread of trip purposes, including return commutes and other activities.

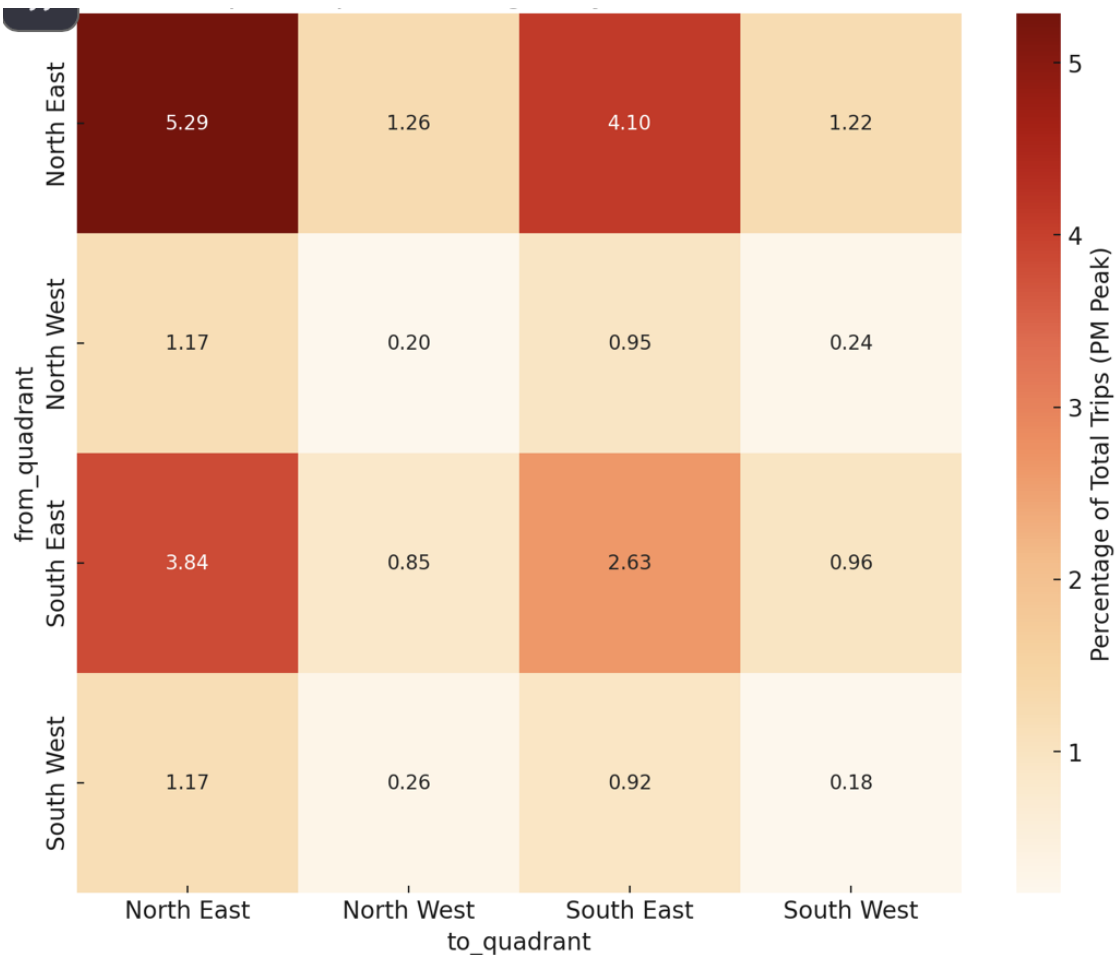


Figure 17 - Heatmap of Travel by Quadrant (PM Peak)

This heatmap showcases the distribution of trip percentages during the PM peak period, with color intensity indicating higher percentages. The emphasis on the North East to South East corridor is evident, alongside a general increase in intra-quadrant travel within the North East, reflecting the evening commute and return patterns.

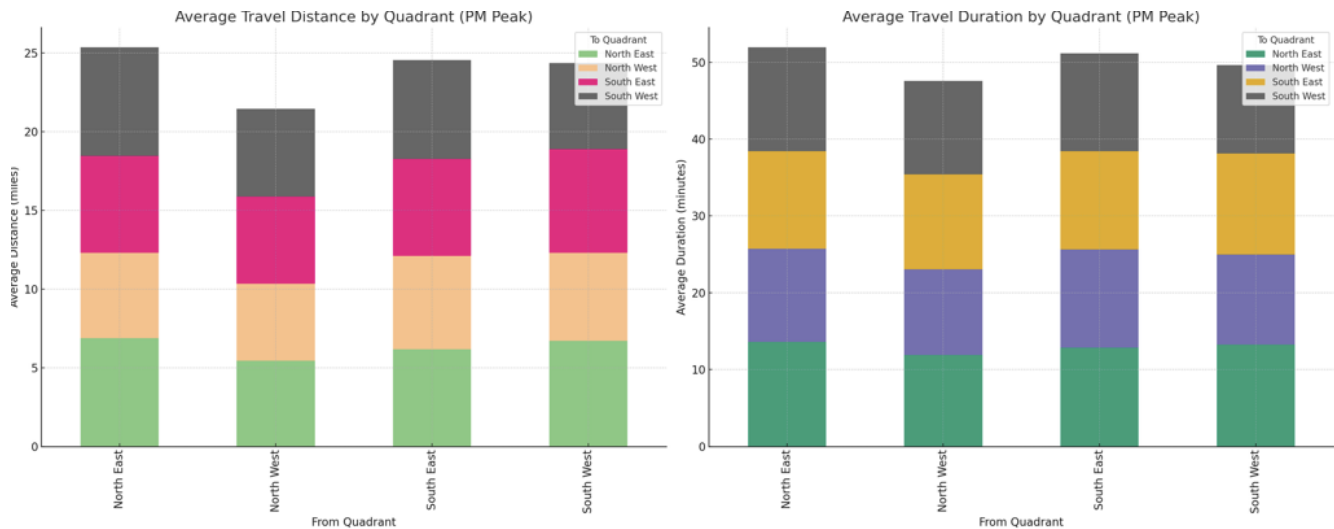


Figure 18 - Average Travel Distance and Duration by Quadrant (PM Peak)

The average travel distances and durations during the PM peak are slightly longer than those observed during the midday period, indicating the widespread nature of evening commutes and potentially increased traffic congestion as people head home.

TRAVEL PATTERNS BEYOND CENTRAL ROSEVILLE

This comprehensive analysis of travel patterns into and out of the center point of Roseville from Auburn, Lincoln, and Rocklin, including surrounding areas within a two-mile radius, has provided valuable insights into the region's mobility dynamics.

INBOUND TRAVEL TO ROSEVILLE

Auburn, Lincoln, and Rocklin show substantial inbound travel activity to the center of Roseville, with Auburn leading in travel intensity. This indicates a significant daily influx of commuters and travelers from these areas into Roseville, likely for employment, education, or access to city amenities.

The AM peak period is particularly busy, as expected, with a noticeable spike in travel from these outlying areas into the city. This highlights the importance of these timeframes in transportation planning and the potential need for targeted traffic management strategies during these hours.

OUTBOUND TRAVEL FROM ROSEVILLE

The outbound travel from the center of Roseville to Auburn, Lincoln, and Rocklin also reflects a notable level of activity. The travel intensity suggests that Roseville serves as a hub from which travel to these areas is significant, possibly for returning residents or for those accessing services and attractions in these locations.

The mobility patterns between Roseville and the surrounding areas of Auburn, Lincoln, and Rocklin underscore the interconnectedness of these communities. Auburn emerges as a focal point of travel, both to and from the city, indicating its prominence in the region's transportation network. Similarly, Lincoln and Rocklin are integral to the flow of travel, with each showing distinct patterns of movement that reflect their unique roles within the broader urban landscape.

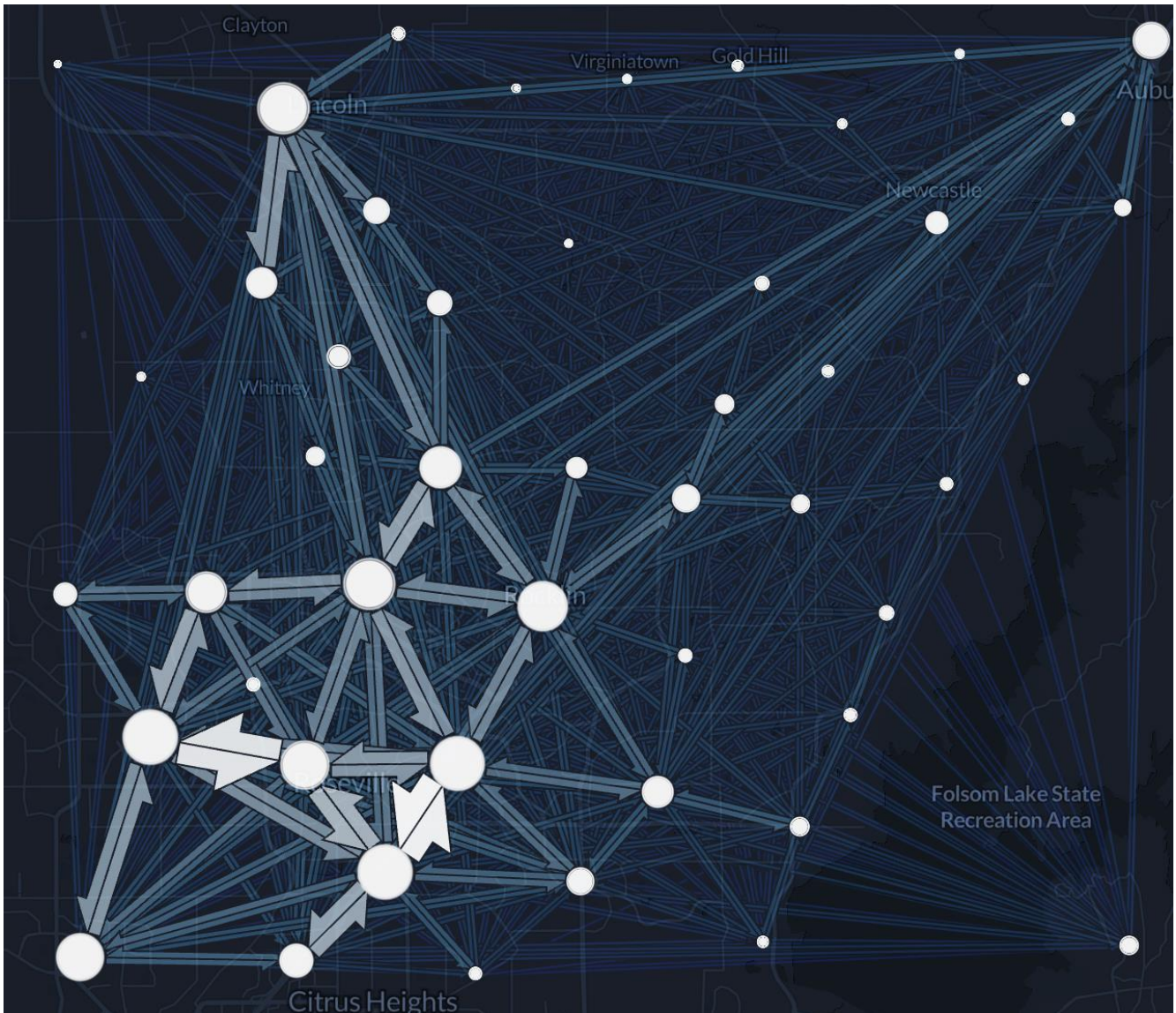


Figure 19 - Travel to and from Roseville from Extended Regions

AUBURN

- **Average Distance:** The average travel distance for trips originating from Auburn is approximately 13.88 miles, indicating longer journeys to reach various destinations within Roseville.
- **Average Duration:** Trips from Auburn to Roseville have an average duration of about 20.04 minutes, reflecting the extended distances covered.
- **Average Travel Intensity:** Approximately 8% of all trips into Roseville originate from Auburn.

LINCOLN

- **Average Distance:** Trips originating from Lincoln have an average travel distance of around 8.22 miles, suggesting moderately long trips that might include both urban and peri-urban travel.
- **Average Duration:** The average duration for trips from Lincoln is approximately 14.69 minutes, which is less than Auburn, consistent with the shorter average distances.
- **Average Travel Intensity:** Approximately 17% of all trips entering Roseville do so from Lincoln.

ROCKLIN

- **Average Distance:** Trips from Rocklin present the shortest average travel distance among the three, at about 6.09 miles.
- **Average Duration:** The average travel duration from Rocklin is approximately 12.26 minutes, the shortest among the three, highlighting efficient travel routes or less congested paths.
- **Average Travel Intensity:** 24% of all trips entering Roseville originate from Rocklin.

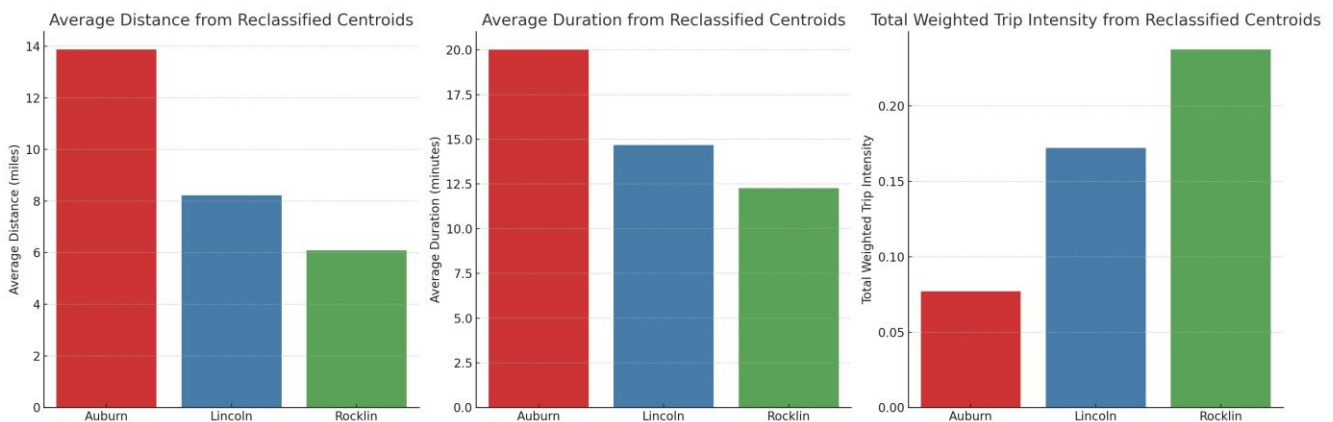


Figure 20 - Average Distance, Time, and Intensity of Trips Entering Roseville

- **Average Distance from Auburn, Lincoln, and Rocklin:** Auburn shows the longest average distance for trips, followed by Lincoln and then Rocklin, which has the shortest average distance. This reflects the relative locations of these areas and the distances required to reach key destinations or the center of Roseville.
- **Average Duration from Auburn, Lincoln, Rocklin:** Consistent with the distance findings, Auburn has the longest average travel duration, indicative of the greater distances involved. Lincoln and Rocklin have shorter durations, with "Rocklin" being the most efficient in terms of travel time.

- **Average Travel Intensity:** The majority of trips into Roseville originate from Rocklin, followed by Lincoln and then Auburn.

TRAVEL INTO ROSEVILLE BY THE TIME OF THE DAY

AUBURN

- AM Peak: Auburn accounts for 6% of the travel into Roseville during the morning rush hour, indicating a significant movement of commuters as the day begins.
- Midday: This level of activity sustains through the midday at 6%, suggesting a consistent flow of trips into Roseville, possibly for business, leisure, or personal errands that extend beyond the morning hours.
- PM Peak: In the evening, the travel intensity from Auburn into Roseville increases to 7%. This uptick may reflect a combination of return commutes and individuals traveling for evening activities within the city.

LINCOLN

- AM Peak: Lincoln contributes 4% to Roseville's inbound travel in the morning, signifying a solid but lesser degree of commuter inflow compared to Auburn.
- Midday: The intensity slightly rises to 5% during the midday, which could indicate that travel from Lincoln is more evenly distributed throughout the day.
- PM Peak: The most substantial increase is seen in the evening, where Lincoln represents 8% of Roseville's inbound travel, suggesting that Lincoln residents may prefer evening activities or that there is a significant return commute population.

ROCKLIN

- AM Peak: Travel from Rocklin into Roseville makes up 3% during the AM Peak, denoting a steady but moderate stream of travelers in the morning.
- Midday: The trip intensity remains consistent at 3% through midday, indicating that travel from Rocklin to Roseville is relatively stable across these hours.
- PM Peak: The evening period maintains the 3% intensity, suggesting that the travel patterns for Rocklin do not fluctuate as much as the other areas and remain constant throughout the day.

The travel patterns into Roseville from Auburn, Lincoln, and Rocklin reveal that while Auburn and Lincoln experience noticeable fluctuations in travel intensity throughout the day, Rocklin's travel demand remains constant. Auburn's travel intensity suggests a robust connection with Roseville throughout the day, with a slight increase in the evening. Lincoln's pattern is particularly noteworthy in the PM Peak, hinting at the potential for significant evening travel needs or a large commuter population returning from Roseville. In contrast, Rocklin's consistent travel intensity could reflect a balanced, steady relationship with the city, possibly due to proximity or the nature of daily activities between these locations.

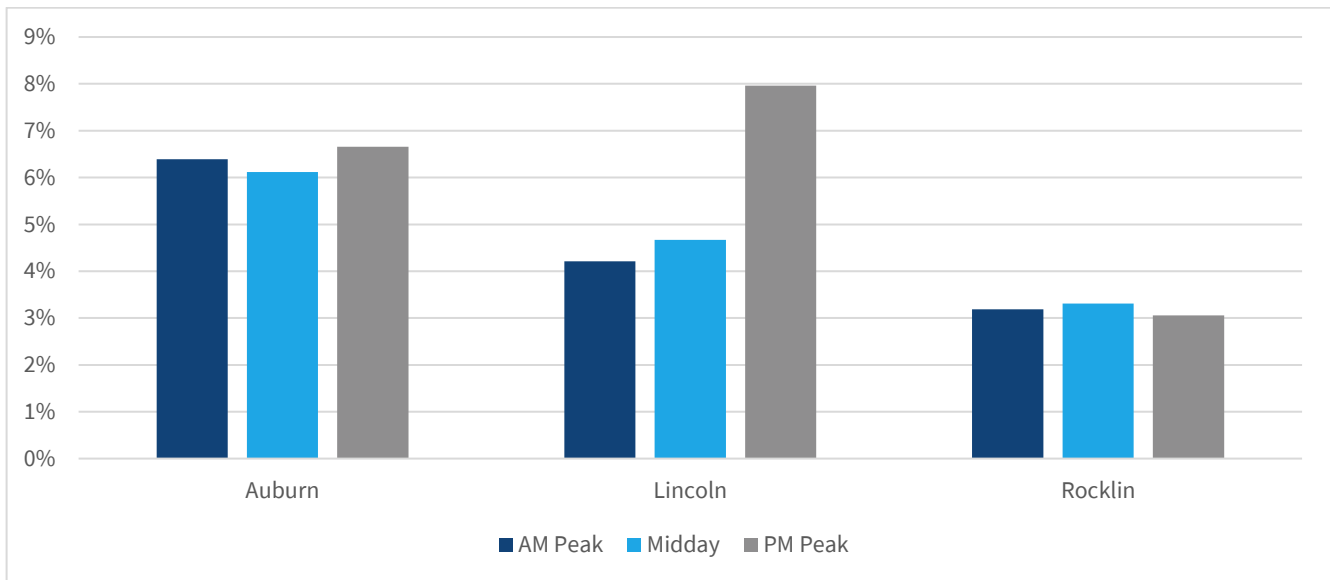


Figure 21 - Travel to Roseville by Time of Day

CONCLUSION

This comprehensive analysis of travel patterns in Roseville provides valuable insights into the city's mobility landscape. The analysis reveals a dynamic mobility landscape characterized by shifts in travel patterns, with concentrated commutes during peak periods and more varied movements during the midday.

The North East to South East travel corridor emerged as a vital route across all time periods, necessitating focused attention to infrastructure improvements and traffic management. Intra-quadrant travel, especially within the Northeast, highlighted the quadrant's role as a significant hub for both residential and commercial activities, underscoring the need for localized transportation planning.

These insights underscore the necessity for a holistic approach to urban and transportation planning in Roseville. Tailoring infrastructure and services to the nuanced patterns of daily travel can enhance the efficiency, sustainability, and resilience of the city's transportation network. Additionally, the analysis of travel patterns into and out of the center point of Roseville from Auburn, Lincoln, and Rocklin, including surrounding areas within a two-mile radius, has provided valuable insights into the region's mobility dynamics. Auburn, Lincoln, and Rocklin show substantial inbound travel activity to the center of Roseville, with Auburn leading in travel intensity.

This indicates a significant daily influx of commuters and travelers from these areas into Roseville, likely for employment, education, or access to city amenities. The outbound travel from the center of Roseville to Auburn, Lincoln, and Rocklin also reflects a notable level of activity. The travel intensity suggests that Roseville serves as a hub from which travel to these areas is significant, possibly for returning residents or for those accessing services and attractions in these locations.

Travel Patterns

OVERVIEW

Transit planning has not evolved much in the past 20 years. Transit authorities and the firms they hire still mostly use operational data (vehicle performance, fares collected, automated passenger counters (APCs) to estimate ridership. There are a few issues with this method in understanding ridership:

1. Fares collected do not provide a complete picture of a user. We can only count the frequency of a trip, or the estimated patronage at a certain stop. It is very difficult, even with account-based payment systems to fully understand origins and destinations of a transit user-base.
2. APCs give a more accurate count of load, and ons and offs at specific stops, but cannot determine that by user.
3. All current methods do not address the changing travel profile that began even before the COVID-19 pandemic and cannot be used to forecast travel patterns in the future.
4. And we cannot solve for equity and access issues by counting existing riders.

As a result, we need new ways to understand travel patterns. As part of the Roseville Transit COA the department is utilizing a next generation way of understanding travel patterns. Using cellular and GPS data, that has been anonymized and disaggregated, and complex machine learning algorithms, the Department is able to better understand true travel patterns. Then comparing these travel patterns across past and current years, Roseville Transit is able to forecast future travel patterns.

This section provides information on current and past travel patterns, and an early glimpse as to how well travel needs are met with existing Roseville Transit services. The focus of these analyses is only on trips that begin or end within Roseville Transit's existing service area. A deeper dive into trips that begin or end in the service area and extend beyond the boundaries of existing service will be provided in the System Analysis section.

PANDEMIC TRAVEL PATTERNS

For the purposes of this plan, Roseville Transit considers the “pandemic” to occur from March 2020 through May 2021. This roughly 15-month period encompasses the March 2020 shutdown through the Delta and start of Omicron waves. At the time of the drafting of this report in November 2023, the pandemic has subsided in most regions in the country, and there are signs that travel patterns and habits are returning to pre-pandemic levels. The goal of reviewing this era is to show how travel patterns changed. We cannot extrapolate much from these travel patterns as they represented a heightened, once in a generation state that will more than likely not occur again. However, these data sets when compared to current data can provide intelligence on the long-term impacts to travel patterns and mobility to help shape the recommendations of the COA.

PANDEMIC TRIP DISTRIBUTION BY TIME OF DAY

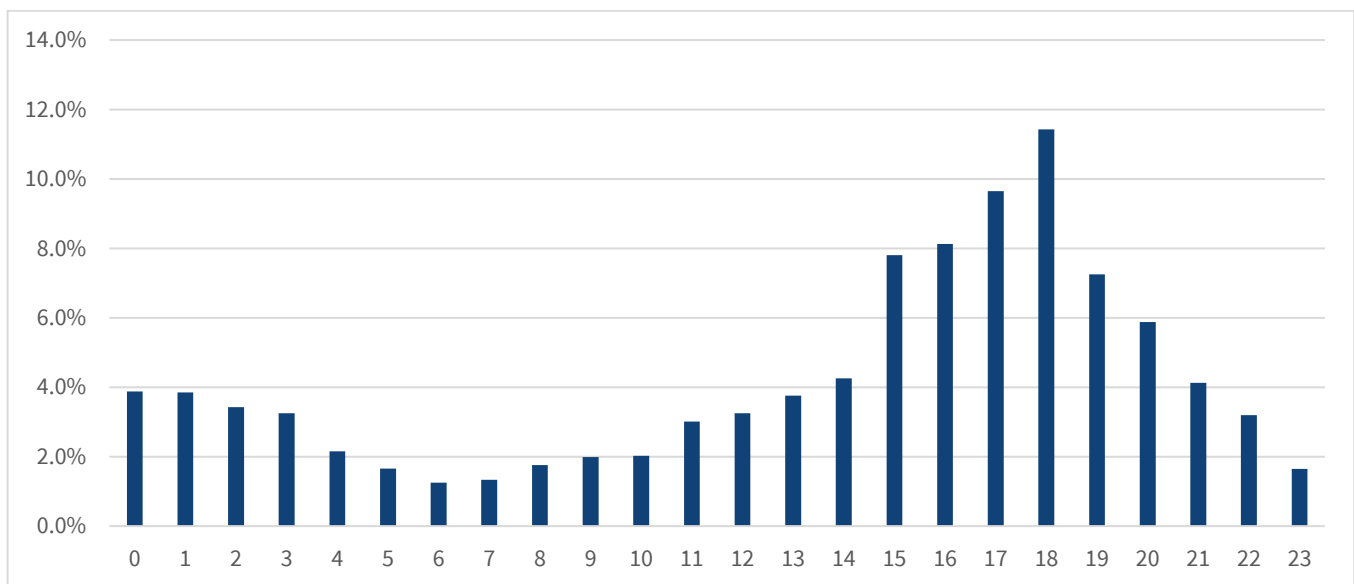


Figure 22 - Pandemic Average Proportion of Trips by Hour

The quietest hours for travel are in the early morning, from 5 AM to 7 AM, where we see the lowest percentage of trips, ranging from 1.3% to 1.7%, with the number of trips increasing gradually from 1,574 to 2,217.

The percentage of trips starts to increase significantly from 3 PM onwards, peaking during the evening rush hour. At 5 PM, there is a notable spike where the percentage of trips reaches 7.8%, and the number of trips is 9,825.

The busiest hour is 6 PM, accounting for 11.4% of the daily trips, with a total of 14,397 trips. This is likely due to the combination of evening rush hour and other activities such as shopping or dining out.

After 7 PM, there is a downward trend in the number of trips, with percentages decreasing steadily from 7.3% at 7 PM to 1.7% by 11 PM.

The number of trips during the midnight hours (from 0 to 4 AM) is relatively stable, hovering around 3.9% to 3.3%, before dropping to 2.2% at 4 AM.

Overall, the data exhibits a typical urban travel pattern with lower trip numbers in the early morning, a gradual increase during the day, a significant spike in the late afternoon to early evening associated with the end of the typical workday, and then a steady decline through the late evening into the night.

POST-PANDEMIC TRAVEL PATTERNS

For the COA, periods after May 2022 through the present are considered “post-pandemic.” While the COVID-19 situation continues to be significant, it appears that most of the general public in the U.S. has become accustomed to it. Most regulations that hindered mobility have also been lifted. Finally, we are seeing more return-to-work requirements from businesses. These combined factors present a reality in stark contrast with pandemic-era mobility. Additionally, as inflation and gas prices continue to rise, public transit becomes an even more critical component of community social infrastructure to help residents get to work, healthcare, and school. While market variables such as inflation have not been included in the data analysis below, the full impact is unknown.

POST-PANDEMIC TRIP DISTRIBUTION BY HOUR

Morning Commute: The post-pandemic data suggests a resurgence in the traditional morning commute, with increased travel percentages from 7 AM to 9 AM. This could indicate more people returning to in-person work and school.

Evening Rush: The evening peak remains significant in both datasets, but the post-pandemic era may show a slight shift towards earlier hours, potentially reflecting changes in work patterns or an increase in evening activities.

Late-Night Travel: The late-night hours show a slight decrease in the number of trips post-pandemic, which may be due to changes in social activities or work-from-home arrangements continuing to some extent.

Overall Volume: The total volume of trips likely increased post-pandemic, suggesting a return towards pre-pandemic levels of activity.

When compared to pandemic era travel, we noticed:

- Notably higher travel activity during the late evening, with a peak at 6 PM (11.4%).
- Morning hours are quieter, with a gradual increase in travel activity throughout the day.
- The lowest percentages of trips occur in the early morning (1.3% at 6 AM and 7 AM).

Since 2022, the following data was evident:

- There is still a peak in travel at 6 PM (11.4%), showing consistency in travel behavior in terms of peak evening rush hour.

- The morning rush hour (7-9 AM) shows a higher percentage of trips compared to the pandemic era, indicating a return to more typical commuting patterns.
- The number of trips in the very early morning hours (0-5 AM) appears slightly reduced in the post-pandemic data.

COMPARATIVE INSIGHTS

Morning Commute: The post-pandemic data suggests a resurgence in the traditional morning commute, with increased travel percentages from 7 AM to 9 AM. This could indicate more people returning to in-person work and school.

Evening Rush: The evening peak remains significant in both datasets, but the post-pandemic era may show a slight shift towards earlier hours, potentially reflecting changes in work patterns or an increase in evening activities.

Late-Night Travel: The late-night hours show a slight decrease in the number of trips post-pandemic, which may be due to changes in social activities or work-from-home arrangements continuing to some extent.

Overall Volume: The total volume of trips likely increased post-pandemic, suggesting a return towards pre-pandemic levels of activity.

The increase in travel during traditional rush hours post-pandemic suggests a move back to pre-pandemic routines. However, the sustained evening peak and the changes in late-night travel also indicate that some pandemic-era patterns may have continued or evolved into new trends.

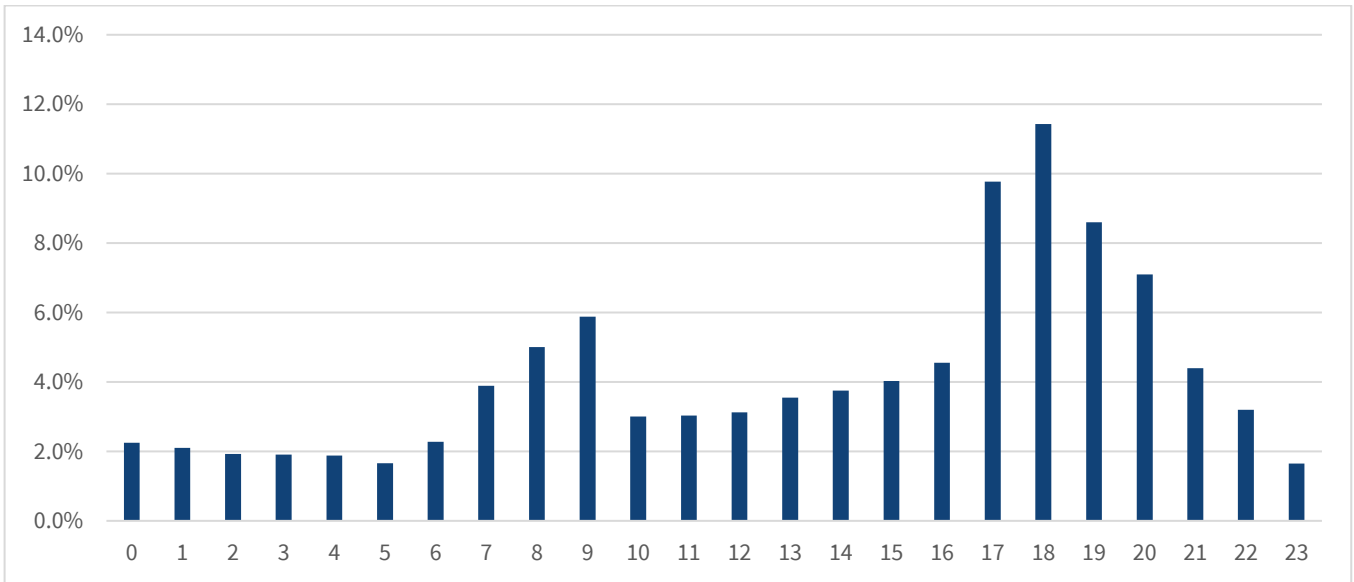


Figure 23 – Post-Pandemic Proportion of Trips by Hour

When comparing trip patterns between pre, mid, and post-pandemic time periods, it is clear that more trips are being taken on a daily basis than prior to the pandemic and more of these new trips are taking place earlier in the day.

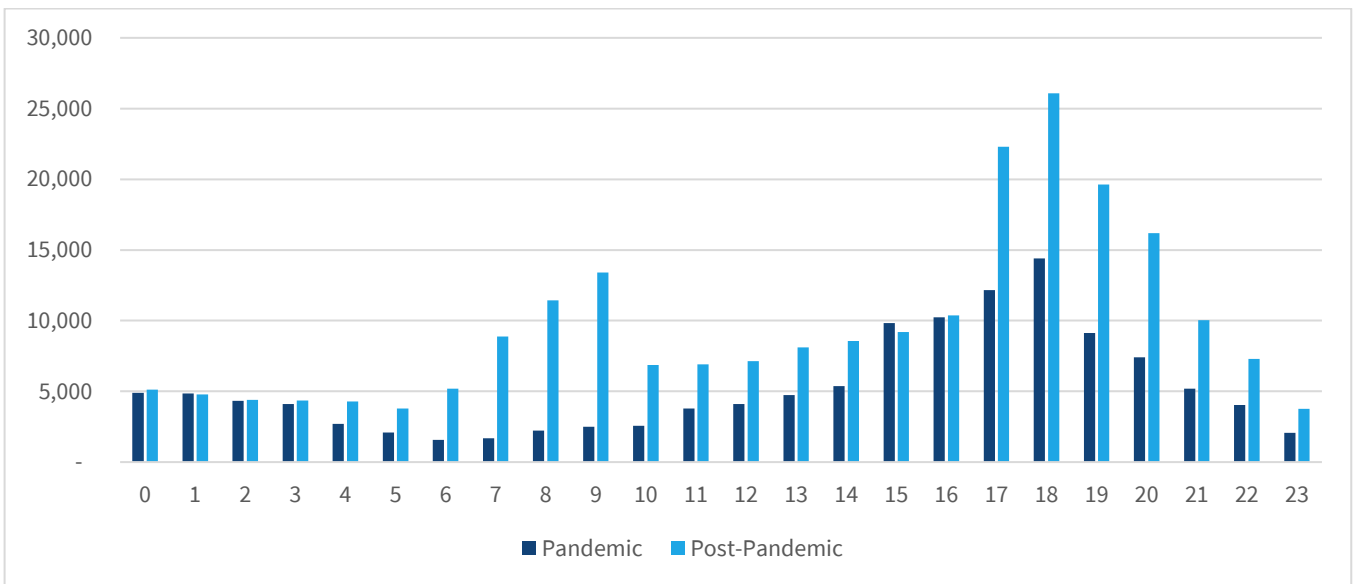


Figure 24 – Trip Comparison by Time Period

POST-PANDEMIC TRIP GENERATORS

The analysis of trip generators and travel intensity within an urban area is crucial for a multitude of urban planning and traffic management applications. The data represented in the heatmap highlights the areas within the City of Roseville that have the highest concentration of trips originating from or ending at certain points, known as centroids. These centroids are indicative of significant locations or facilities that attract or generate a high volume of traffic, such as commercial districts, transportation hubs, schools, or medical centers. Understanding the distribution and intensity of travel can inform infrastructure development, traffic optimization, public transit planning, and the strategic placement of services and amenities. It aids city planners and policymakers in making data-driven decisions to improve congestion, enhance public safety, and ensure the efficient movement of people and goods. Moreover, this analysis can also be used to predict future travel patterns and to support economic development by identifying potential areas for investment and growth.

- **Central Roseville:** There's a notable concentration of high-intensity areas in what seems to be central Roseville. This suggests that the city center might be a major trip generator, likely due to a combination of commercial, cultural, or administrative activities.
- **Intersections and Roadways:** The heatmap shows increased intensity along certain lines, which could indicate major roads or intersections that naturally attract more trips due to traffic flow and accessibility to various services and amenities.
- **Northwest and Southeast Areas:** There are pockets of higher intensity in both the northwest and southeast parts of the map. These could represent shopping centers, industrial areas, or other significant commercial or residential developments.
- **Outer Areas:** Although less intense than the center, there are still visible spots on the outskirts that indicate the presence of trip generators, possibly suburban shopping areas, large department stores, or community centers.

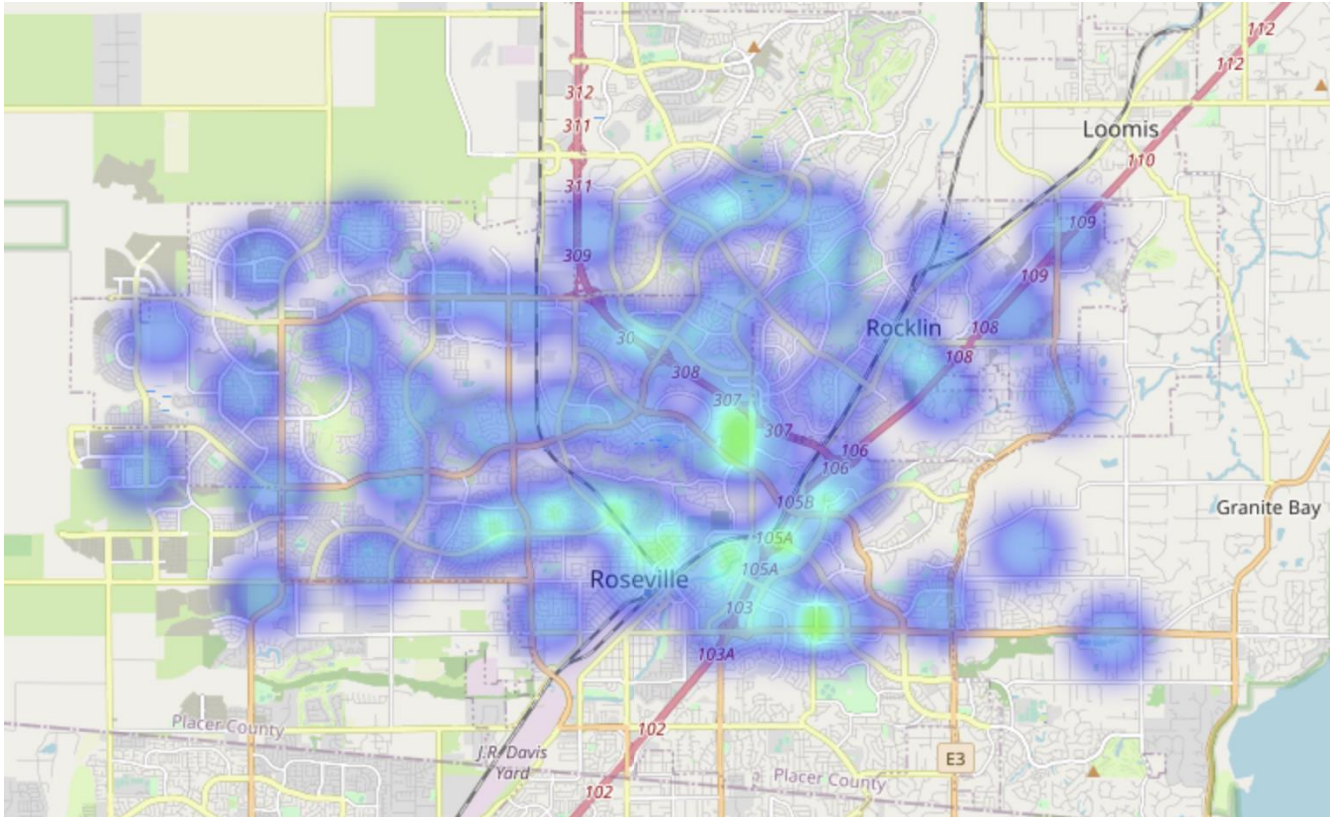


Figure 25 – Trip Generators

Based on the centroids' data and using a simple approximation of the city center (within one standard deviation of the median latitude and longitude), about 42.21% of trip generators are located in what can be generally described as central Roseville. This indicates that a significant portion of travel activity is concentrated in the central area of the city, reflecting the common urban pattern where central areas are often hubs for business, commerce, and social activities.

TRAVEL TIME

For most trip generators, the average travel time for trips originating from or going to them is around 12 minutes, with some variation.

- The average travel time from trip generators ranges from about 8.85 to 19.38 minutes and to them ranges from 9.32 minutes to 18.11 minutes.
- The average travel time is approximately 12.23 minutes.

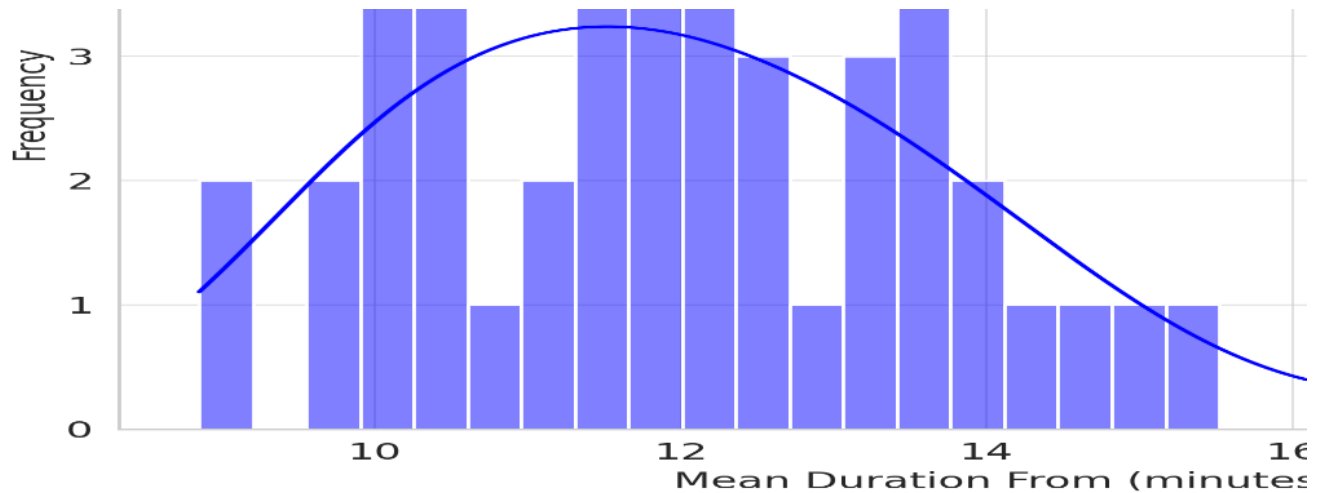


Figure 26 - Travel Time to and from Major Trip Generators

DISTANCE TO TRANSIT

The analysis reveals that, on average, the trip generators in the City of Roseville are approximately 0.73 miles away from the nearest public transit stop. This distance suggests a moderate level of accessibility to public transit. While it is not an extremely close proximity, it is still within a reasonable walking distance for many people. Typically, a distance of about 0.5 miles is considered a comfortable walking distance in urban planning contexts. The fact that the average distance is slightly more than this threshold indicates that while many centroids are reasonably well-served by public transit, there may be room for improvement in terms of increasing accessibility.

TRAVEL TIME ON TRANSIT

To provide a visual representation of the spread and concentration of travel times under transit conditions, we utilize average travel speed in a car versus on transit. The average speed for travel in Roseville is approximately 24 miles an hour, and on fixed route, the travel speed is 11.75 miles per hour. Using this data, the following charts represent the average travel time from major trip generators in Roseville using transit.

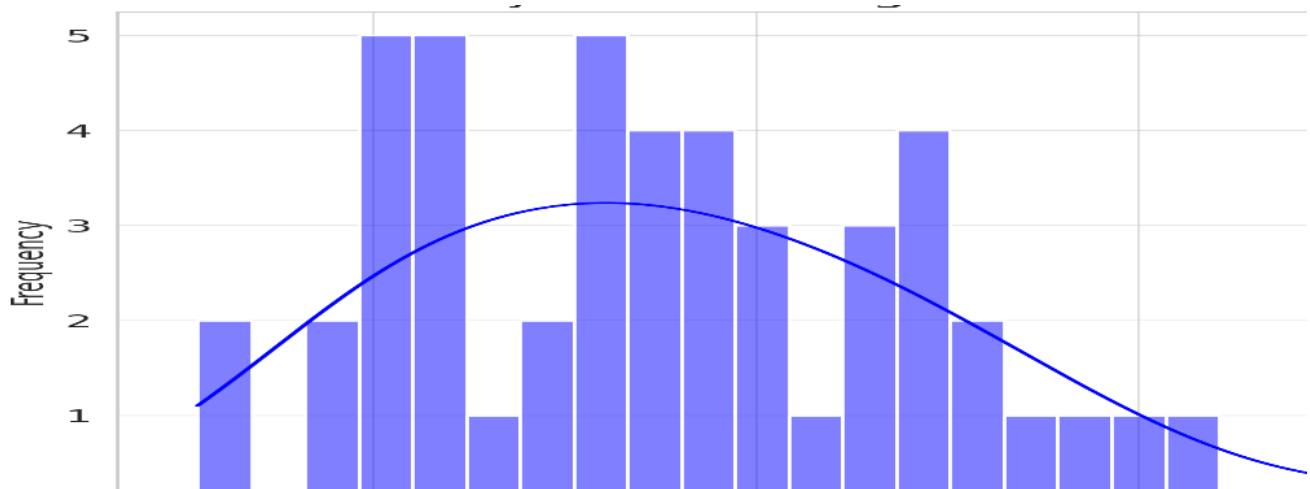


Figure 27 - Travel Time to and from Major Trip Generators using Transit

Compared to non-transit users, the average travel time is approximately 24.5 minutes.

While the pandemic brought significant alterations in travel behaviors, with a notable reduction in overall travel and different trip distribution times, the post-pandemic period is showing signs of returning to pre-pandemic norms in many aspects. However, some changes, particularly in late-night travel, appear to be persisting, indicating evolving trends.

This report underscores the importance of analyzing trip generators and travel intensity within Roseville for urban planning and traffic management. It identifies key trip generators such as central Roseville, major roads, intersections, and specific neighborhoods, with most trips averaging around 12 minutes and originating within a reasonable distance from public transit stops. This analysis is crucial for making data-driven decisions to improve congestion, enhance public safety, and ensure efficient movement of people and goods.

Overall, the increase in travel during traditional rush hours post-pandemic suggests a move back to pre-pandemic routines. However, the sustained evening peak and the changes in late-night travel also indicate that some pandemic-era patterns may have continued or evolved into new trends. This comprehensive understanding of travel patterns is vital for city planners and policymakers, as it aids in forecasting future travel patterns and supporting economic development by identifying potential areas for investment and growth.

Transit Effectiveness Review

EXECUTIVE SUMMARY

This report presents a comprehensive analysis of the transit system in Roseville, aimed at evaluating its effectiveness, accessibility, and overall user experience. Utilizing various data sources, including GPS tracking, travel time comparisons, and user feedback, the report introduces the innovative Transit Effectiveness Index (TEI) as a holistic measure of transit service quality. The TEI encompasses several critical components, including accessibility, efficiency, service quality, and sustainability, providing a multifaceted view of the transit system's performance.

KEY FINDINGS

Accessibility Analysis: Roseville transit stops are generally well-distributed across central residential and commercial areas. However, there are opportunities to expand coverage in outlying regions to enhance overall accessibility.

Efficiency Comparison: The analysis revealed a significant efficiency gap between car and transit travel. On average, transit trips take 50% longer than car trips, indicating a need for service optimization to improve transit competitiveness.

Service Quality Assessment: While average in terms of frequency and coverage, the transit system in Roseville shows potential for enhancements in reliability, user amenities, and overall customer satisfaction.

Sustainability Considerations: The report recognizes the role of transit in promoting sustainable urban mobility. Improving transit effectiveness can reduce reliance on personal vehicles, decreasing traffic congestion and emissions.

Transit Effectiveness Index (TEI): The TEI calculated for Roseville is approximately 5.17/10, suggesting moderate effectiveness of the current transit system with substantial room for improvement, especially regarding travel time efficiency.

PROJECT GOALS

To foster a holistic improvement in public transit and overall mobility in Roseville, it is crucial to establish clear and actionable goals encompassing a broad spectrum of considerations, from enhancing user experience to promoting sustainability. Based on the insights derived from the Transit Effectiveness Report and the Transit Effectiveness Index (TEI), the following goals are proposed:

1. ELEVATE THE TRANSIT EXPERIENCE TO ACHIEVE A HIGHER TEI

Objective: Increase Roseville's TEI score to above 7.5/10 within the next five years by implementing targeted improvements in accessibility, efficiency, and service quality.

Strategies:

- Deploy real-time information systems to reduce uncertainty around wait times and improve user satisfaction.
- Enhance transit stop amenities, including shelters, seating, and lighting, to improve comfort and safety.
- Optimize transit routes and schedules to minimize travel times and improve reliability.

2. ACHIEVE A MODAL SHIFT TOWARDS PUBLIC TRANSIT

Objective: Increase public transit ridership by 25% over the next five years, reducing reliance on personal vehicles and decreasing traffic congestion and emissions.

Strategies:

- Introduce incentive programs, such as fare discounts and integrated ticketing systems, to make transit more appealing.
- Implement targeted marketing campaigns to raise awareness of the benefits and convenience of using public transit.
- Enhance connectivity between different modes of transportation, making it easier for residents to combine transit with walking, cycling, or ride-sharing.

3. FOSTER SUSTAINABLE URBAN MOBILITY

Objective: Position Roseville as a leader in sustainable urban mobility by integrating environmentally friendly practices into the transit system and encouraging green transportation choices.

Strategies:

- Transition to a fleet of low-emission or zero-emission vehicles, including electric buses, to reduce the transit system's carbon footprint.
- Develop and expand dedicated infrastructure for bicycles and pedestrians, promoting active transportation as a viable and attractive option.
- Collaborate with local businesses and institutions to support and advocate for sustainable commuting options for employees and students.

4. ENHANCE DATA-DRIVEN DECISION-MAKING IN TRANSIT PLANNING

Objective: Utilize advanced analytics and data collection methods to inform transit planning and service adjustments, ensuring that resources are allocated efficiently to meet the community's needs.

Strategies:

- Implement a comprehensive data collection framework that captures detailed information on transit usage patterns, passenger demographics, and customer feedback.
- Leverage data analytics tools to perform regular assessments of transit service performance, identifying areas for improvement and adjusting services proactively.
- Foster partnerships with technology companies and academic institutions to explore innovative solutions and approaches to data-driven transit planning.

5. REEVALUATE AND INNOVATE COMMUTER SERVICES TO ENHANCE VIABILITY AND RELEVANCE

Objective: Leverage the findings from the comprehensive analysis of commuter services in Sacramento to implement strategic enhancements within the following year. The goal is to increase the service's viability and relevance, adapting to the evolving commuter needs in the post-COVID landscape where traditional work patterns have shifted significantly.

Strategies:

- **Market and Needs Assessment:** Conduct surveys and focus groups with current and potential commuter service users to understand their changing needs, preferences, and commuting patterns in the wake of increased work-from-home arrangements. Analyze demographic and employment trends to anticipate future commuting behaviors and identify underserved markets or opportunities for service expansion.
- **Service Model Innovation:** Explore flexible service models such as on-demand transit, shuttle services, or partnerships with ride-sharing platforms to offer more adaptable commuting solutions that can better serve fluctuating demand and diverse commuter schedules. Consider implementing express services, limited-stop routes, or dedicated lanes during peak hours to enhance the speed and attractiveness of commuter transit.
- **Collaboration and Stakeholder Engagement:** Engage with employers in both Roseville and Sacramento, including major corporations and government agencies, to understand their operational plans and explore opportunities for collaboration on tailored commuter solutions. Partner with regional transportation authorities, metropolitan planning organizations, and other municipalities to align commuter services with broader regional transportation initiatives and funding opportunities.
- **Communication and Promotion:** Develop targeted marketing campaigns to communicate the benefits and conveniences of revamped commuter services, emphasizing flexibility, reliability, and sustainability. Utilize digital platforms, social media, and employer networks to reach potential users and inform them about service options, schedules, and updates.

By pursuing these goals, Roseville can enhance the overall transit experience and contribute to the development of a more sustainable, efficient, and integrated urban mobility landscape. These efforts will collectively support the city's broader objectives of improving quality of life, reducing environmental impact, and fostering a vibrant, connected community.

METHODOLOGY

This section outlines the methodologies employed to analyze the effectiveness of public transit in Roseville, particularly regarding the proximity of key centroids representing high travel intensity to transit stops. The study leverages spatial analysis techniques to quantify and categorize the accessibility of public transit from various locations within the city.

DATA SOURCES AND ACQUISITION

- **Roseville Stop List:** An Excel file containing detailed information about public transit stops in Roseville, including stop names, geographic coordinates (latitude and longitude), and unique identifiers.
- **Centroid Intensity Data:** A CSV file listing the centroids within Roseville represents the center points of areas generating significant travel. Key columns include centroid identifiers, geographic coordinates, travel intensity, distance, and duration metrics.

DATA PREPARATION

Data preparation involved several vital steps to ensure the accuracy and usability of the datasets:

- **Validation and Cleaning:** Both datasets were examined for missing values, duplicates, and inconsistencies. Necessary corrections were made to ensure data quality.
- **Data Integration:** The datasets were prepared for spatial analysis by converting them into GeoDataFrames, a data structure suitable for geographic operations in Python. This involved embedding latitude and longitude coordinates into a geometry column.

SPATIAL ANALYSIS

The core of the methodology revolves around spatial analysis, performed through the following steps:

- **Distance Calculation:** For each centroid, the distance to the nearest transit stop was computed using the shortest path geometric distance.
- **Proximity Categorization:** Centroids were categorized based on their proximity to the nearest transit stop into four categories: Transit Adjacent (within 0.25 miles), Transit Accessible (between 0.25 and 0.5 miles), Inaccessible (greater than 0.5 and 1 mile).

- Travel Intensity Analysis: Centroids were ranked based on their "travel intensity," a measure derived from the weighted trip intensity total. The top 25 centroids, representing the highest travel intensity locations, were identified for further analysis. These top 25 centroids account for over 95% of all trips taken within Roseville.

STATE OF PUBLIC TRANSIT IN ROSEVILLE

Roseville's transit system is undergoing transformation and adaptation, influenced by changing travel patterns and technological advancements. The comprehensive review of Roseville Transit's services, including local fixed-route services, demand response programs, and commuter services, reveals both challenges and opportunities for enhancement.

KEY HIGHLIGHTS:

- **Ridership Trends:** A decline of 12.5% in local fixed-route services was observed in the fiscal year 2021-22, primarily due to the COVID-19 pandemic. However, routes like A and B showed resilience with consistent increases in ridership, indicating strong demand in specific corridors.
- **Service Efficiency:** The adoption of microtransit technology and collaboration with the GO South Placer network has begun to improve service efficiency and passenger convenience.
- **Demand Response Programs:** Transition to Arrow microtransit from Dial-A-Ride has seen a positive uptick in ridership, showing a preference for flexible, on-demand transit solutions. ADA Paratransit services continue to meet the critical needs of passengers with disabilities.
- **Commuter Services:** The pandemic and the rise of remote work policies have significantly impacted commuter service ridership, necessitating a reevaluation of services to align with new work norms.

ORIGIN-DESTINATION ANALYSIS:

- **Travel Patterns:** Analysis of all-day travel patterns revealed balanced distribution across the city's quadrants, with key routes indicating the interconnectedness of Roseville's urban fabric. Peak periods show concentrated commutes necessitating efficient transportation solutions.
- **Intra and Inter-Quadrant Mobility:** Significant movement within and between the Northeast and South East quadrants suggests these critical corridors require focused attention for infrastructure improvements and traffic management.

The insights emphasize the need for a holistic approach to urban and transportation planning in Roseville. Tailoring services to nuanced daily travel patterns can enhance the efficiency, sustainability, and resilience of the city's transportation network.

Roseville's transit system is at a crossroads, facing the dual challenge of adapting to post-pandemic realities while seizing opportunities for innovation and improvement. Strategic planning, community engagement, and data-driven decision-making will be pivotal in shaping a more connected, efficient, and user-centered mobility ecosystem in Roseville.

CENTROID PROXIMITY ANALYSIS

USING CENTROIDS TO DETERMINE TRAVEL INTENSITY

In the context of this report, "centroids" refer to specific, predefined points within the city of Roseville that are used to represent areas of interest or significant locations for the analysis of travel patterns and transit service effectiveness. These centroids can be based on various criteria, such as population density, commercial activity centers, key public facilities, or other significant land uses that generate or attract trips.

Each centroid is assigned geographic coordinates (latitude and longitude) to precisely locate it within the urban fabric of Roseville. The selection and definition of these centroids are crucial for conducting spatial analyses, such as measuring the proximity to transit stops, evaluating travel intensity, and assessing the overall accessibility of public transit services.

The travel intensity associated with each centroid is a measure of the volume or density of trips originating from or destined for that point, reflecting the level of transit demand or activity in the vicinity. By analyzing these centroids, the report aims to identify patterns of high demand, assess the adequacy of current transit services, and pinpoint areas where improvements could enhance transit effectiveness and accessibility.

CENTROID PROXIMITY TO TRANSIT

In the context of this report on public transit effectiveness in Roseville, the terms "transit accessible," "transit adjacent," and "inaccessible" are used to categorize locations based on their proximity to public transit stops. These categories help to evaluate how well different areas of the city are served by public transit and identify potential areas for service improvement. Here's a detailed definition of each term:

TRANSIT ADJACENT

Definition: Locations classified as "transit adjacent" are those within a very short walking distance of a transit stop, typically defined as within 0.25 miles (or approximately 400 meters). This category represents the highest level of transit accessibility, implying that residents or businesses in these areas can easily walk to a transit stop in a matter of minutes.

Implication: Being "transit adjacent" suggests that the area is highly conducive to transit use, potentially leading to higher ridership and more efficient use of transit services due to the convenience and ease of access.

TRANSIT ACCESSIBLE

Definition: "Transit accessible" locations are within a moderate walking distance from a transit stop, usually defined as being more than 0.25 miles but within 0.5 miles (approximately 400 to 800 meters). This category indicates good accessibility, with transit stops still within a reasonable walking distance for most individuals.

Implication: Areas deemed "transit accessible" are considered well-served by public transit, though not as optimally located as "transit adjacent" areas. Residents and businesses in these areas can still conveniently use transit services, albeit with a slightly longer walk.

INACCESSIBLE

Definition: Locations categorized as "inaccessible" are those more than 0.5 miles from the nearest transit stop, making the distance potentially too far for a comfortable walking commute for most people.

Implication: Being "inaccessible" highlights areas where public transit services may be insufficient or inadequately distributed, leading to lower transit use and potentially higher reliance on personal vehicles. These areas might be considered transit deserts, where the demand for public transit is not met by current services.

By categorizing locations into these three tiers, the report aims to systematically assess the spatial distribution of transit accessibility in Roseville and identify strategic opportunities for enhancing public transit connectivity and coverage.

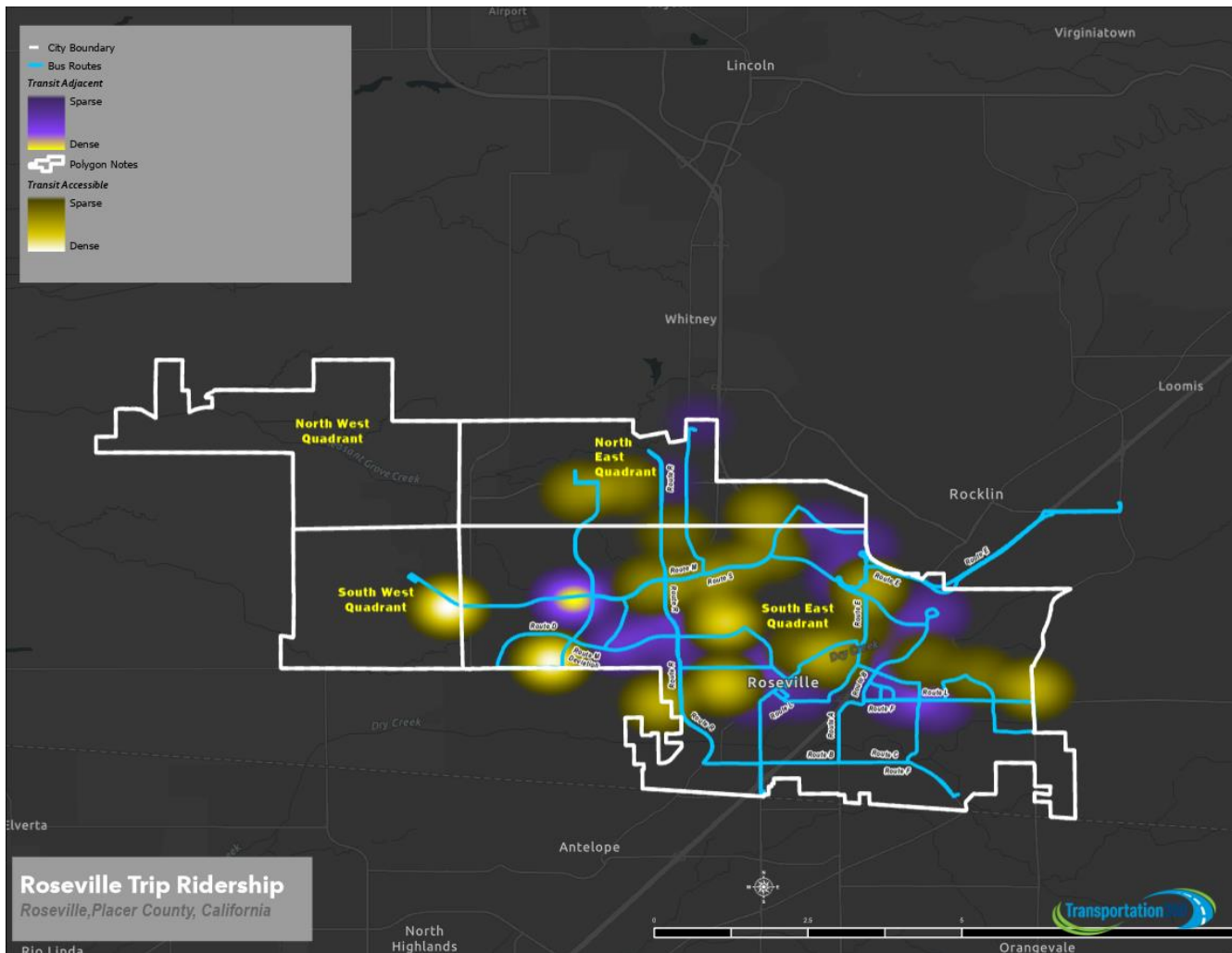


Figure 28 - Adjacent or Accessible Centroids

This heat map visualizes the distribution of centroids within Roseville that are well-served by the current public transit network, categorized as either "transit adjacent" (within 0.25 miles of a transit stop) or "transit accessible" (within 0.25 to 0.5 miles). These centroids are represented on the map with varying intensities of color, indicating the level of travel intensity and, thus, potential transit usage in these areas.

The map reveals clusters of high travel intensity in areas with good transit proximity, suggesting that these locations are key hubs of activity, possibly including residential neighborhoods, commercial districts, or other significant community areas. The proximity to transit stops in these areas likely enhances the attractiveness and utility of public transit for residents and visitors, potentially leading to higher ridership and more sustainable travel patterns.

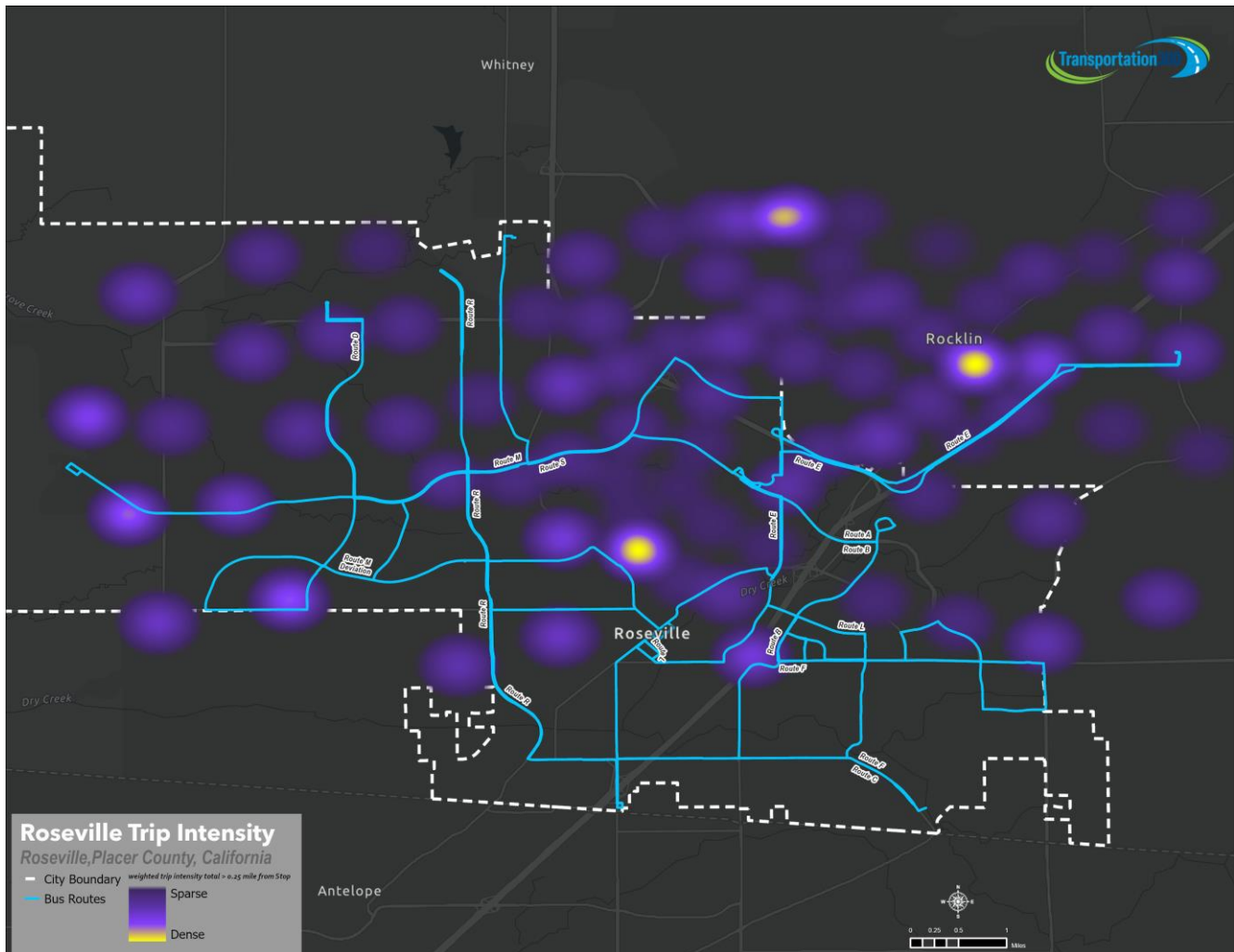


Figure 29 - Centroid Proximity to Transit

The analysis of centroids in Roseville, categorized based on their proximity to transit stops, reveals insightful trends regarding travel intensity as a function of accessibility to public transit. This analysis divides centroids into three categories: "Transit Adjacent" (within 0.25 miles of a transit stop), "Transit Accessible" (within 0.25 to 0.5 miles), and "Inaccessible" (greater than 0.5 miles from a transit stop). Travel intensity for each centroid has been recalculated as a percentage of the maximum intensity observed across all centroids, providing a normalized measure to compare across different areas.

In the "Transit Adjacent" category, which includes 11 centroids, the average travel intensity percentage is approximately 54.4%, with a variation range reflecting the diverse nature of these locations. The minimum and maximum travel intensity percentages in this group are 37.4% and 100%, respectively, indicating a significant spread in the intensity of travel, potentially due to varying degrees of development, land use, and population density near these transit stops.

The "Transit Accessible" category comprises five centroids, showcasing a slightly lower average travel intensity percentage of around 49.7%. This category's travel intensity percentages range from 35.1% to 87.5%, suggesting a broad spectrum of travel demand within moderate walking distances to transit stops. The relatively wider standard deviation in this category highlights the variability in how moderately proximate locations relate to their usage of nearby transit services.

Centroids classified as "Inaccessible," numbering 9, exhibit an average travel intensity percentage similar to the "Transit Adjacent" category, at approximately 54.2%. The range of intensity percentages (36.3% to 88.4%) in this category underscores the presence of significant travel demand even in areas not immediately near transit stops, possibly indicating unmet transit needs or the influence of other factors, such as the availability of alternative transportation modes.

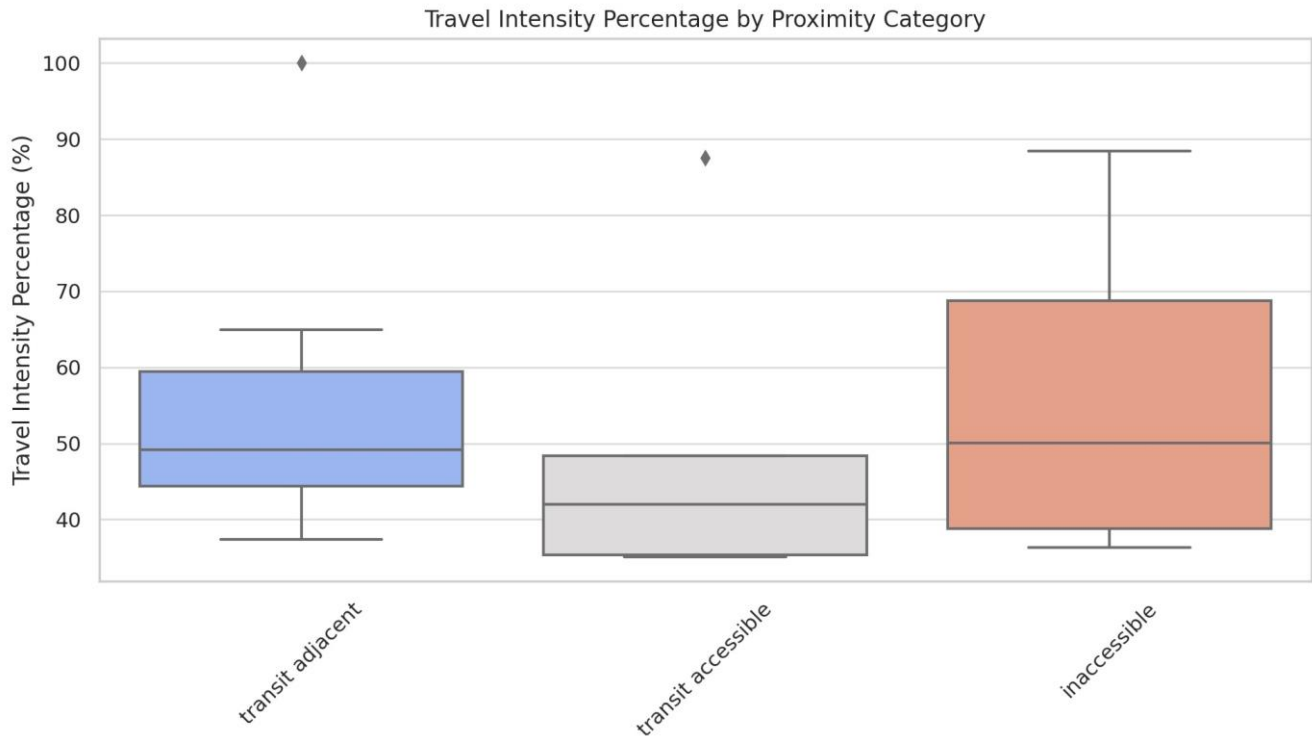


Figure 30 - Statistical analysis of proximity distribution

A boxplot visualization further elucidates these findings, presenting a clear comparative view of travel intensity distributions across the different proximity categories. This visual representation confirms the broad range of travel intensities within each category and underscores the existence of outliers, particularly in the "Inaccessible" category, which might be areas with high travel demand yet insufficient transit services.

This nuanced analysis offers valuable insights for urban planners and transit authorities in Roseville, highlighting areas with high travel intensity that may benefit from enhanced transit accessibility. Identifying such areas can guide efforts to optimize transit service layouts, improve accessibility, and ultimately increase transit ridership by better-aligning services with the travel patterns and needs of the community.

HIGH TRAVEL INTENSITY CENTROIDS INACCESSIBLE BY TRANSIT

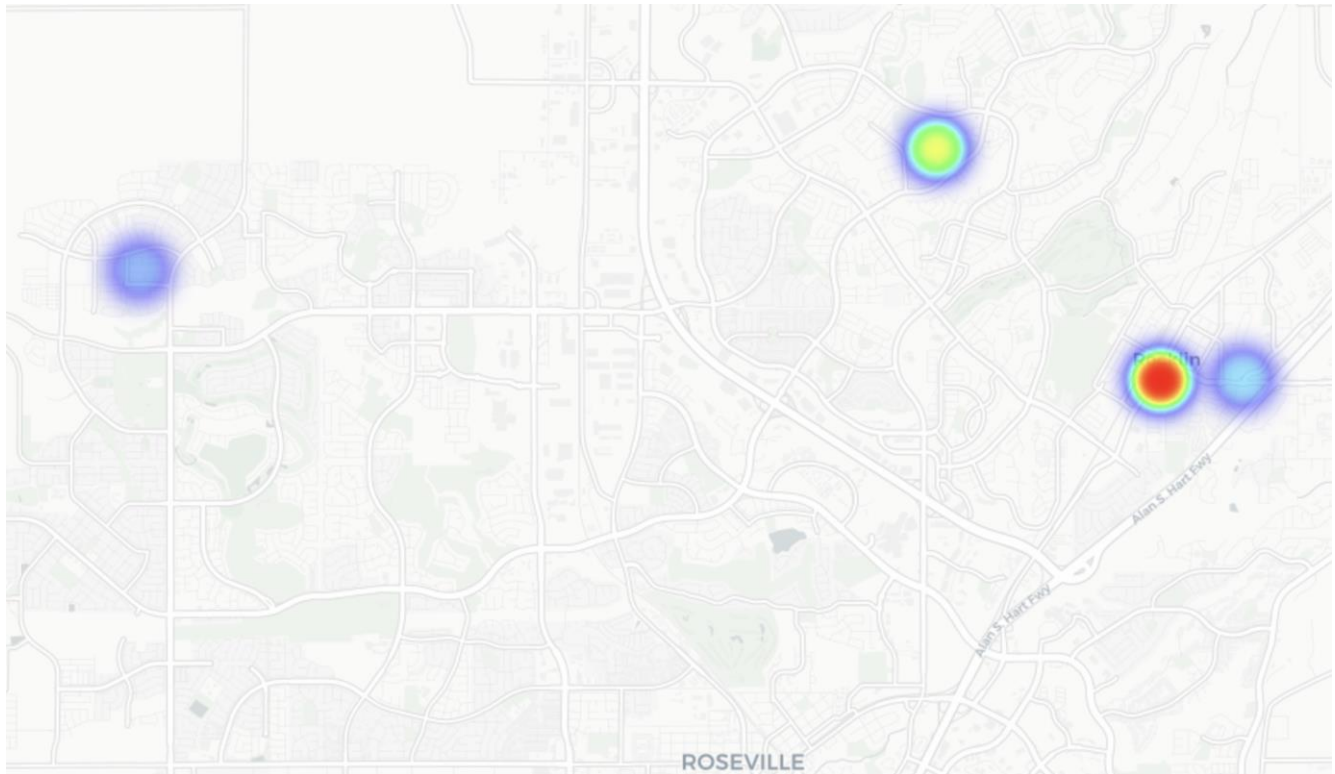


Figure 31 - Centroids with the highest intensity and furthest from transit

The heat map of Roseville provides a compelling visualization of the spatial distribution of centroids characterized by high travel intensity yet positioned furthest from existing public transit stops. These centroids, highlighted through warmer colors on the map, signify areas with significant transit demand that may not be adequately served by the current public transit infrastructure.

Centroids with high travel intensity reflect areas with substantial movement, possibly due to dense residential populations, commercial hubs, or key community facilities that generate a high number of trips. The fact that these areas are also among the furthest from transit stops underscores a potential gap in transit service coverage, indicating that residents and businesses in these areas might face challenges in accessing convenient public transportation options.

The areas highlighted on the heat map could be critical focal points for city planners and transit authorities in Roseville. Addressing the transit needs in these locations could involve a variety of strategies, such as introducing new transit routes, increasing the frequency of existing services, or implementing alternative transit solutions like demand-responsive transport or micro-mobility hubs to bridge the first-mile/last-mile gap.

Moreover, this analysis could inform broader urban and transportation planning efforts, guiding decisions on land use, zoning, and infrastructure investments to foster transit-oriented development. Enhancing transit accessibility in these high-demand areas not only serves immediate mobility needs but also supports longer-term goals of sustainable urban growth, reduced reliance on personal vehicles, and improved quality of life for the residents of Roseville.

In conclusion, the heat map analysis serves as a crucial tool in identifying underserved areas within the urban fabric of Roseville, offering a visual and data-driven foundation for targeted improvements in transit service planning and urban development strategies.

TRANSIT EXPERIENCE ASSESSMENT

The exploration of transit experience within Roseville transcends the conventional metrics of accessibility, extending beyond the mere proximity of key locations to transit stops. In this section, we delve into a holistic analysis that emphasizes the intrinsic value of the transit journey itself, underscoring the significance of the user experience in public transportation. This approach recognizes that true accessibility is multifaceted, encompassing not only the spatial and physical aspects of transit but also the qualitative dimensions that influence an individual's choice to utilize public transportation.

The attractiveness of transit as a viable travel option is paramount in fostering a sustainable and efficient urban mobility framework. It is essential to acknowledge that the decision to opt for transit over personal vehicles is not solely dictated by the distance one must travel to access a transit stop. Instead, the overall experience—encompassing factors such as travel time reliability, convenience, comfort, and the comparative advantage of transit over other modes of travel—plays a crucial role in shaping public perception and usage of transit services.

In assessing the transit experience, we aim to redefine accessibility to encapsulate the experiential elements that contribute to transit's appeal. By evaluating the most common trips within Roseville and comparing travel times between transit and driving, we gain insights into the competitive position of transit in the city's transportation landscape. This analysis not only highlights areas where transit effectively meets or exceeds the efficiency of personal vehicles but also identifies opportunities for enhancing the transit experience, making it a more attractive and viable choice for residents and visitors alike.

Understanding the broader context of transit accessibility, including the qualitative aspects of the transit experience, is crucial in developing strategies that encourage higher transit ridership. By focusing on improving the overall quality of the transit journey, Roseville can advance towards a more connected, sustainable, and user-centric transportation network, where public transit stands as a preferred mode of travel for a diverse array of trip purposes and user groups.

DEFINING TRANSIT EXPERIENCE

Within the context of evaluating and enhancing public transportation systems, "transit experience" encompasses the entirety of a user's interaction with the transit service, from the initial access to a stop or station to the completion of a journey. This concept extends beyond the traditional measures of accessibility and frequency, delving into the qualitative aspects that influence a user's perception and satisfaction with the transit service. Key components of the transit experience include:

CONVENIENCE

- **Ease of Access:** The simplicity with which users can reach transit stops or stations, including the availability of pedestrian infrastructure, signage, and real-time information.
- **Service Frequency:** The regularity of transit services, minimizing wait times, and ensuring reliability.
- **Network Connectivity:** The efficiency of the transit network in facilitating direct or seamless transfers across different routes and modes.

COMFORT AND SAFETY

- **Vehicle Conditions:** The physical state and cleanliness of transit vehicles, as well as the availability of amenities such as seating, air conditioning, and lighting.
- **Station and Stop Amenities:** The presence of shelters, seating, lighting, and real-time information displays at transit stops and stations to enhance user comfort and security.
- **Personal Safety:** The perception and reality of safety within transit vehicles, stops, and stations, particularly during night-time or off-peak hours.

EFFICIENCY AND RELIABILITY

- **Travel Time:** The duration of transit trips compared to alternative modes of transportation, emphasizing speed and directness.
- **Punctuality:** The adherence of transit services to scheduled times, reducing unpredictability and enhancing user trust.
- **Crowding:** The management of vehicle capacity to prevent overcrowding, ensuring a more pleasant and comfortable journey.

USER EXPERIENCE

- **Customer Service:** The quality of interaction and service provided by transit staff, including drivers and customer support personnel.

- **Information Accessibility:** The availability and clarity of information regarding routes, schedules, fares, and real-time updates, both digitally and within the transit environment.
- **Integration with Other Modes:** The coordination between transit and other forms of transportation, such as biking, walking, and ride-sharing, to facilitate comprehensive door-to-door mobility solutions.

In essence, the transit experience is a holistic measure that captures the physical, emotional, and practical aspects of using public transportation. It reflects the degree to which the transit system meets the needs and expectations of its users, ultimately influencing the choice to utilize public transit over other modes of travel. Enhancing the transit experience is pivotal in promoting higher ridership, fostering sustainable urban mobility, and achieving broader transportation and environmental goals.

METHODOLOGY

The methodology for evaluating travel time and distance, comparing transit to driving within Roseville, leverages an innovative approach that combines GPS data with custom-developed algorithms. This approach provides a nuanced understanding of urban mobility patterns, especially in relation to Roseville Transit. Here's an overview of the methodology used:

CREATION OF CENTROIDS

- **Identification of Points of Interest:** The first step involved analyzing Roseville's urban landscape to identify significant points of interest (POIs) and transit nodes. These include areas with high pedestrian traffic, commercial districts, residential areas, and key transit stops.
- **Development of Custom Algorithms:** To accurately match user locations to these POIs, custom algorithms were developed. These algorithms are designed to interpret GPS data, enabling precise mapping of individuals' movements within the city.
- **Formation of Centroids:** Centroids were established based on the identified POIs and the refined GPS data. These centroids serve as representative points that aggregate the travel behaviors and patterns associated with each POI, facilitating a structured analysis of urban mobility.

ANALYSIS OF TRAVEL PATTERNS

- **Tracking Time and Movement:** The methodology involves tracking the amount of time individuals spend at various locations, as well as their movements between these points. This data is crucial for understanding the flow of people within Roseville and their interaction with the transit system.
- **Evaluation of Transit Nodes:** By examining travel patterns by time of day and the duration spent at critical locations, the study highlights the role of transit nodes in the city's transportation network. This analysis helps identify peak usage times and areas with potential bottlenecks or high demand.

COMPARISON OF TRANSIT VS. DRIVING

In the comparative analysis of transit versus driving within Roseville, an advanced methodology was employed to ensure a comprehensive and accurate assessment of travel times for each mode of transportation. This methodology incorporated several key components to enhance the precision of the analysis:

UTILIZATION OF GOOGLE MAPS API

- **Route and Travel Time Data:** The Google Maps API was leveraged to obtain detailed route information and travel time estimates for both car and transit trips between each pair of centroids. This integration provided access to real-time and historical traffic data, allowing for a nuanced comparison of travel times under varying conditions.
- **Transit and Driving Comparisons:** By utilizing the Google Maps API, the analysis could directly compare the efficiency of driving routes with available transit routes, including information on transit schedules, route options, and estimated travel times.

INCORPORATION OF TRANSIT-SPECIFIC TIMES

- **Wait Times:** Recognizing the impact of wait times on the overall transit experience, the analysis factored in the headways for each transit route at each stop. This approach allowed for a realistic estimation of the time passengers would spend waiting for transit services based on the scheduled frequency of service.
- **Dwell Times:** Additionally, dwell times at each stop were incorporated into the transit travel time calculations. Dwell times represent the duration a transit vehicle spends at a stop for passenger boarding and alighting, which can significantly influence total travel time on transit routes.

ANALYSIS ACROSS MULTIPLE TIMES

- **Average Weekday Analysis:** To account for variability in travel conditions throughout a typical day, the analysis was conducted for multiple time points on an average weekday. This approach captured the range of travel times that commuters might experience due to fluctuations in traffic patterns and transit service levels.
- **Mean Transit Travel Time:** The results from these multiple analyses were aggregated to produce mean transit travel times. This metric offers a representative estimate of transit travel times, smoothing over the peaks and troughs to present an average scenario that users might encounter.

By employing this rigorous methodology, incorporating real-time data from the Google Maps API, and considering the unique aspects of transit travel, such as wait and dwell times, the analysis provides a holistic view of the travel experience in Roseville. This comparative assessment of transit versus driving not only highlights areas where transit is competitive but also identifies opportunities for enhancing the attractiveness and efficiency of Roseville's public transportation system, thereby promoting a shift towards more sustainable and user-friendly urban mobility.

TRAVEL TIME AND DISTANCE ANALYSIS

The comparative analysis of travel times between transit and driving in Roseville provides critical insights into the current state of urban mobility within the city. On average, car trips are significantly quicker, with an average travel time of approximately 14.66 minutes, compared to transit trips, which average around 32.47 minutes. This substantial difference highlights the efficiency gap between the two modes of transportation, indicating that for the majority of trips, driving is the faster option.

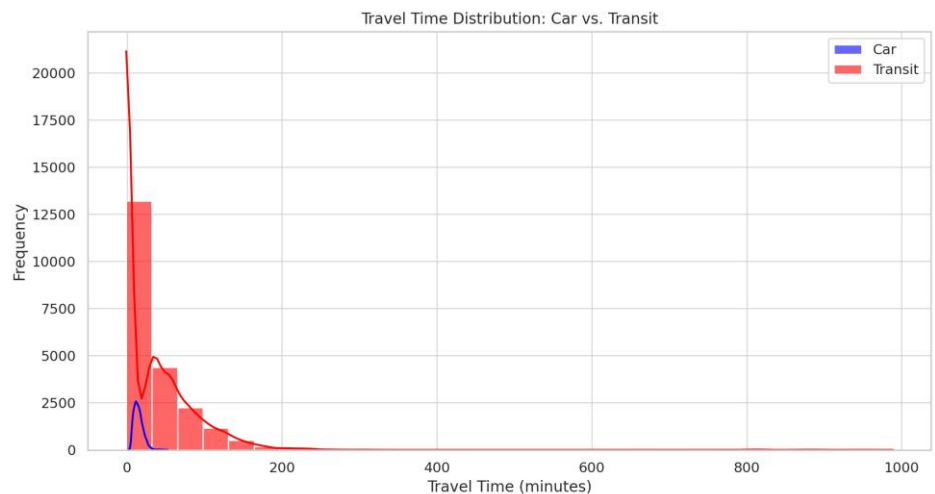


Figure 32 – Travel Time Comparison

The distribution of travel times, as visualized in the histograms, reveals a tighter clustering of car travel times, suggesting a relatively consistent and predictable travel experience for drivers. In contrast, transit travel times exhibit a broader spread, with a notable extension towards higher durations. This variability in transit times could be attributed to factors such as route indirectness, waiting times for services, and the necessity for transfers, all of which can contribute to longer overall journey times.

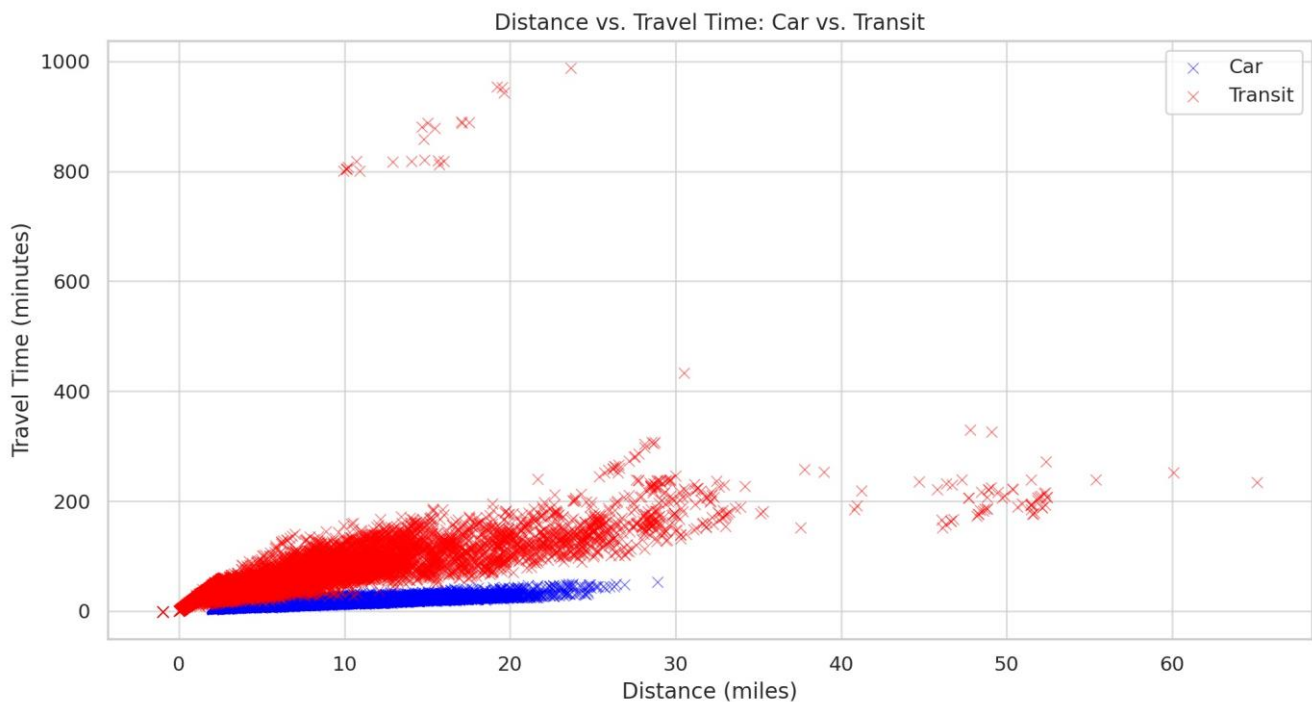


Figure 33 - Time vs Distance Histogram

Further analysis through a scatterplot examining the relationship between trip distance and travel time for both modes of transportation illustrates a more linear relationship for car trips, where travel time increases relatively steadily with distance. However, the same analysis for transit trips shows a less predictable pattern, reflecting the complexities and inefficiencies that can arise in public transit routing, including potentially less direct paths and variations in service frequency.



Figure 34 - Outlier Analysis

The investigation into outliers and extremes, focusing on trips where the difference in travel time between transit and driving is exceptionally high, uncovers specific instances—particularly at greater distances—where the inefficiency of transit is most pronounced. These cases, marked by significant discrepancies in travel time, underscore areas where improvements to the transit system could yield substantial enhancements in service competitiveness and attractiveness.

This analysis underscores the need for targeted initiatives to improve the transit experience in Roseville. By addressing the identified inefficiencies, particularly for those trips where transit lags significantly behind driving in terms of travel time, there is a substantial opportunity to enhance the appeal of public transportation. Optimizing routes, increasing service frequency, and reducing wait and transfer times could narrow the efficiency gap between transit and driving, encouraging higher ridership and contributing to the development of more sustainable and accessible urban transportation network solutions.

TRANSIT EFFECTIVENESS INDEX

INTRODUCTION

In the quest to enhance urban mobility and promote sustainable transportation options, the Transit Effectiveness Index (TEI) emerges as a pivotal tool designed to encapsulate and quantify the multifaceted nature of public transit services. The creation of the TEI is motivated by the recognition that traditional metrics of transit accessibility, such as proximity to transit stops and service frequency, while important, do not fully capture the comprehensive experience of transit users. The TEI aims to bridge this gap by integrating a broader spectrum of factors that influence transit use, including efficiency, convenience, service quality, and overall user satisfaction.

The primary purpose of the TEI is to provide urban planners, transit authorities, and policymakers with a nuanced and actionable metric that reflects the true quality of the transit experience from the perspective of the user. By moving beyond conventional measures of accessibility, the TEI seeks to highlight areas where transit services excel as well as identify opportunities for targeted improvements. Ultimately, the TEI serves as a guide for enhancing the attractiveness and competitiveness of public transit, encouraging a shift away from personal vehicle reliance and fostering a more connected, sustainable, and livable urban environment.

METHODOLOGY

The methodology for developing the Transit Effectiveness Index (TEI) involves a systematic approach to collecting, analyzing, and integrating diverse data sources that reflect the key components of the transit experience. The process can be outlined in the following steps:

- **Data Collection:** Gather comprehensive data sets covering various aspects of the transit system and user experience, including geospatial data, transit schedules, travel time comparisons, user feedback, and environmental impact assessments.
- **Component Scoring:** Define specific criteria for each component of the TEI, such as accessibility, efficiency, service quality, and sustainability. Assign scores to each component based on the collected data, using a consistent scale (e.g., 1 to 10) to facilitate comparison and aggregation.
- **Weighting and Integration:** Determine the relative importance of each component in contributing to the overall transit experience. Apply appropriate weights to each component score, reflecting their impact on user decisions and satisfaction.

- Calculation of the TEI: Aggregate the weighted scores for all components to derive the overall TEI for the transit system or specific areas within the city. The TEI should provide a clear and concise metric that can be used to compare different areas or evaluate changes over time.
- Analysis and Interpretation: Analyze the TEI results to identify strengths and weaknesses in the transit system. Use the insights gained to inform strategic planning, resource allocation, and targeted interventions to improve the transit experience.

ROSEVILLE'S TRANSIT EFFECTIVENESS INDEX

To calculate Roseville's Transit Effectiveness Index (TEI), we assume the following data:

- Average Car Travel Time: 15 minutes for the most common routes within Roseville.
- Average Transit Travel Time: 22.5 minutes for the same routes, representing a 50% longer travel time than by car.
- Accessibility Score: Remains at 7/10, assuming good coverage but room for expansion.
- Revised Efficiency Score: 2.5/10, reflecting the 50% longer average travel time on transit compared to driving.
- Service Quality Score: Remains at 6/10, assuming average frequency and coverage with potential for enhancements.

OVERALL TEI FOR ROSEVILLE:

The combined scores, including the revised Efficiency Score, yield an overall TEI. The calculation is as follows:

This TEI of approximately 5.17/10 suggests that while there are aspects of the transit system in Roseville that are functioning reasonably well (such as accessibility and certain elements of service quality), there is a significant opportunity for improvement, particularly in making transit travel times more competitive with car travel. This refined TEI can serve as a valuable tool for urban planners and transit authorities in Roseville to identify targeted strategies for enhancing the efficiency and overall attractiveness of the city's public transit system, ultimately aiming to provide a more compelling and sustainable alternative to personal vehicle use.

CONCLUSION

The Transit Effectiveness Report for Roseville offers a thorough examination of the city's public transportation system, leveraging a wealth of data and insights to assess its current state and identify pathways for improvement. Through detailed analyses encompassing accessibility, efficiency, service quality, and the innovative Transit Effectiveness Index (TEI), this report has illuminated both the strengths and areas for development within Roseville's transit network.

The introduction of the TEI has provided a novel framework for evaluating transit services, extending beyond traditional metrics to consider the holistic user experience. This approach has underscored the importance of not only physical access to transit but also the efficiency, reliability, and overall attractiveness of transit as a viable alternative to personal vehicle use.

Key findings from the report reveal a moderate level of transit effectiveness in Roseville, with significant opportunities to enhance service efficiency, expand coverage, and elevate the quality of the transit experience. The analysis of commuter services in Sacramento, in particular, has highlighted the need for innovative solutions to adapt to changing work patterns and ensure the continued relevance of these services.

In conclusion, the report sets forth several strategic goals aimed at advancing Roseville's transit system. These include elevating the overall transit experience, achieving a modal shift towards public transportation, fostering sustainable urban mobility, enhancing data-driven decision-making, and reimagining commuter services to Sacramento. By pursuing these goals, Roseville can make substantial strides toward creating a more connected, sustainable, and user-friendly urban transportation landscape.

The path forward will require collaborative effort, strategic investment, and a commitment to innovation. With the insights and recommendations provided in this report, Roseville is well-equipped to embark on a transformative journey towards enhancing its transit system, ultimately contributing to the city's broader objectives of improving quality of life, reducing environmental impact, and fostering a vibrant, accessible community for all residents and visitors.

Evaluating Effectiveness

INTRODUCTION

The purpose of this report is to provide a comprehensive evaluation and analysis of the Roseville Transit system using the Transit Effectiveness Index (TEI). This report aims to achieve several key objectives.

First, it evaluates the current performance of the transit system. By utilizing the TEI, the report measures the effectiveness of Roseville's transit services in terms of coverage and user experience. It analyzes key data points to understand the strengths and weaknesses of the current transit system, providing a clear picture of how well the system serves the community.

Second, the report informs strategic recommendations. The insights gained from the TEI analysis are used to develop strategic recommendations for enhancing transit services. The report identifies specific areas where improvements can be made to increase the efficiency, reliability, and overall user satisfaction of the transit system. These recommendations are designed to help transit authorities make data-driven decisions that will lead to meaningful improvements in service quality.

Third, the report supports data-driven decision-making. It provides a detailed, data-driven basis for decision-making by city planners, transit authorities, and stakeholders. By leveraging data, the report highlights the importance of making informed choices about resource allocation, service enhancements, and policy changes. This approach ensures that decisions are grounded in a thorough understanding of the transit system's performance and user needs.

Fourth, the report aims to enhance service delivery and user satisfaction. It focuses on improving the transit experience for users by addressing key issues identified through the TEI analysis. The goal is to make the transit system a more attractive and competitive option compared to driving, thereby increasing ridership and reducing traffic congestion. By enhancing the user experience, the report aims to build a more loyal and satisfied ridership base.

Finally, the report promotes sustainable and equitable transit solutions. It emphasizes the need for sustainable transit solutions that reduce environmental impact and promote long-term urban growth. The report also ensures that transit services are equitable and accessible to all community members, including underserved and vulnerable populations. By addressing these issues, the report aims to create a transit system that supports the city's overall sustainability goals and provides equitable access to transit for all residents.

By fulfilling these objectives, this report seeks to provide a clear and actionable roadmap for enhancing the Roseville Transit system. The ultimate goal is to contribute to the city's overall mobility, sustainability, and quality of life, ensuring that the transit system meets the needs of the community now and in the future.

ANALYSIS OF KEY DATA POINTS AND FINDINGS

This section provides a detailed analysis of the key data points and findings from the evaluation of the Roseville Transit system using the Transit Effectiveness Index (TEI). The analysis draws on a combination of anonymized cellular data and operational data from Roseville Transit to offer a comprehensive view of transit system performance.

The total daily trips taken in Roseville are approximately 85,000. Of these trips, existing transit services cover approximately 52%. This indicates a significant proportion of daily travel is accommodated by the current transit network, demonstrating the system's broad reach within the city. However, there is still a considerable percentage of trips not covered by transit, highlighting opportunities for service expansion and improvement.

For non-transit trips, the average trip distance is 4.67 miles, with an average travel time of 11 minutes and an average speed of 24 mph. These data points provide a benchmark for understanding the efficiency of non-transit travel within Roseville. In contrast, transit trips have an average duration of 56 minutes and an average speed of 7.3 mph.

The significant difference in travel times and speeds between transit and non-transit trips indicates a critical area for improvement in the transit system's performance. The analysis also reveals predominant north/south travel patterns within the city, suggesting a need for localized, self-contained transit zones that can efficiently cater to these directional travel demands.

This insight can guide the optimization of existing routes and the development of new ones to better serve the community's travel needs. Detailed data from two primary datasets were utilized in this analysis. The first dataset comprises anonymized cellular data, which captures a wide array of travel behaviors across different transportation modes. This data is processed using proprietary algorithms to determine travel intensity, origins, and destinations within a quarter-mile accuracy, and to detail the frequency, time of day, and day of the week of trips.

Collected over a full year, this dataset ensures a representative view of travel behaviors across varied seasons and times. The foundational insights provided by this dataset are crucial for assessing the broad coverage and utilization aspects of the TEI. The second dataset comes directly from Roseville Transit and includes detailed operational data.

This dataset tracks the origins and destinations of the system's on-demand service and provides data on boardings and alightings within the fixed route bus system. Like the cellular data, it covers over a year of operations, ensuring comprehensive temporal alignment for analysis. This operational data is key to assessing the 'experience' component of the TEI, offering insights into the actual performance of transit services against user needs and expectations.

The integration of these datasets allows for a comprehensive analysis that combines broad behavioral insights with specific transit operational metrics. This dual approach ensures that the TEI reflects both theoretical coverage and practical on-ground service effectiveness. It helps pinpoint where transit services are meeting user needs and where they are falling short, guiding informed decisions about resource allocation and strategy implementation.

The policy and planning implications of this analysis support data-driven strategies to improve the appeal and functionality of the transit system. In summary, the detailed analysis of key data points and findings highlights the strengths and weaknesses of the Roseville Transit system. It provides a clear basis for making strategic recommendations aimed at enhancing service delivery, improving user satisfaction, and promoting sustainable and equitable transit solutions.

OVERVIEW OF TEI AND IMPORTANCE OF ANALYSIS

OVERVIEW OF TEI

The Transit Effectiveness Index (TEI) is a comprehensive metric designed to evaluate the performance of transit systems. It measures transit effectiveness based on two primary components: coverage and user experience. Coverage refers to the extent to which the transit system serves the geographical area and population of a city, ensuring that a majority of residents have access to transit services. User experience, on the other hand, assesses the quality of the transit service from the perspective of the user, considering factors such as travel time, convenience, and reliability. By combining these components, the TEI provides a comprehensive view of how well the transit system serves the community.

IMPORTANCE OF ANALYSIS

This analysis is crucial for understanding where the transit system excels and where it falls short. By evaluating both coverage and user experience, the TEI highlights specific areas of strength and weakness within the transit system. This detailed understanding is essential for informing targeted improvements that can enhance service delivery and user satisfaction. Identifying gaps in coverage helps to pinpoint areas where transit services need to be expanded or optimized, ensuring that all community members have equitable access to public transportation. Assessing user experience provides insights into how the transit system can be made more efficient, reliable, and user-friendly. Ultimately, this analysis supports data-driven decision-making by city planners, transit authorities, and stakeholders, enabling them to allocate resources effectively and implement strategic changes that improve the overall functionality and appeal of the transit system.

KEY DATA POINTS SUMMARY

This section provides a detailed analysis of the key data points related to the Roseville Transit system, utilizing the Transit Effectiveness Index (TEI). The analysis is based on data collected from anonymized cellular sources and operational data from Roseville Transit. The key data points include total daily trips, transit coverage, average trip distance and speed for both transit and non-transit trips, and predominant travel patterns within the city.

TOTAL DAILY TRIPS

Approximately 85,000 trips are taken each day in Roseville. Of these trips, existing transit services cover approximately 52%. This indicates that a significant proportion of daily travel is accommodated by the current transit network, demonstrating the system's broad reach within the city. However, there is still a considerable percentage of trips not covered by transit, highlighting opportunities for service expansion and improvement.

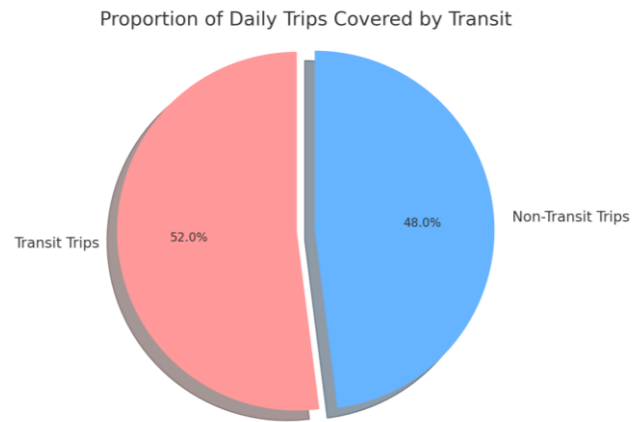


Figure 35 - Trips Covered by Existing Transit

AVERAGE TRIP DISTANCE AND SPEED

For non-transit trips, the average trip distance is 4.67 miles, with an average travel time of 11 minutes and an average speed of 24 mph. These data points provide a benchmark for understanding the efficiency of non-transit travel within Roseville. In contrast, transit trips have an average duration of 56 minutes and an average speed of 7.3 mph. The significant difference in travel times and speeds between transit and non-transit trips indicates a critical area for improvement in the transit system's performance.

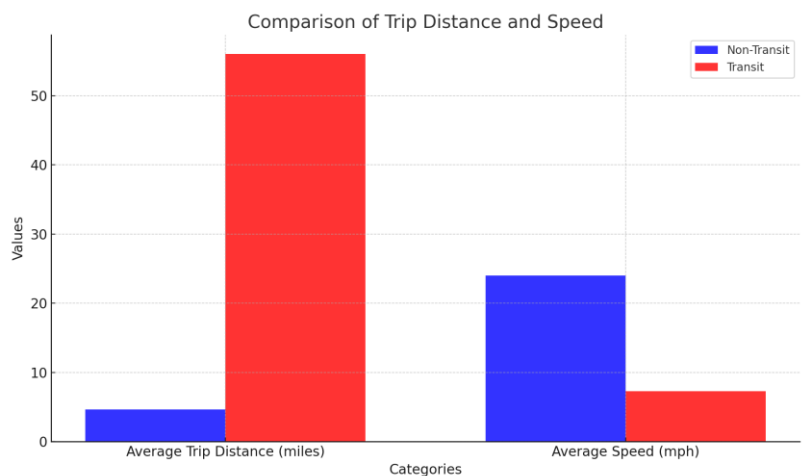


Figure 36 - Transit Time Compared to Driving

TRAVEL PATTERNS

The analysis also reveals predominant north/south travel patterns within the city. This suggests a need for localized, self-contained transit zones that can efficiently cater to these directional travel demands. Understanding these travel patterns is essential for optimizing existing routes and developing new ones to better serve the community's travel needs.

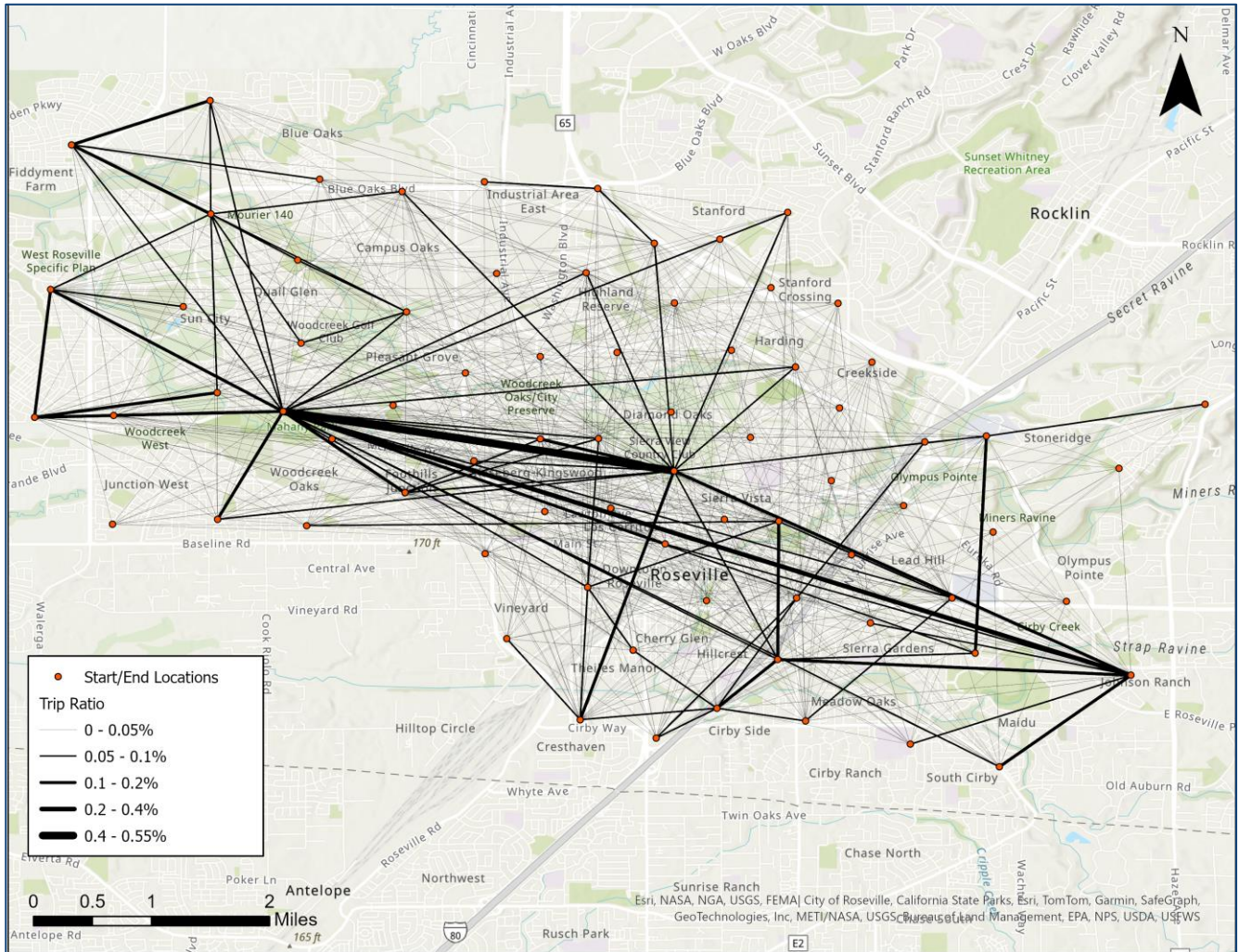


Figure 37 - Current Travel Patterns

METHODOLOGY FOR DEVELOPING THE TEI

The methodology for developing the TEI involves integrating data from two primary sources: anonymized cellular data and operational data from Roseville Transit.

1. Anonymized Cellular Data:

- **Source and Nature:** This dataset comprises anonymized travel data from cellular signals, capturing a wide array of travel behaviors across different transportation modes.
- **Data Processing:** Proprietary algorithms analyze this data to determine travel intensity, origins, and destinations within a quarter-mile accuracy, and detail the frequency, time of day, and day of the week of trips.
- **Temporal Scope:** Collected over a full year at periodic intervals, ensuring the data is representative of varied seasonal and temporal travel patterns.
- **Role in TEI:** This dataset provides foundational insights into general travel behaviors and major travel corridors, essential for assessing the broad coverage and utilization aspects of the TEI.

2. Roseville Transit Operational Data:

- **Source:** Directly sourced from Roseville Transit, this dataset includes detailed operational data from the transit system in the City of Roseville.
- **Data Details: On-Demand Service:** Tracks the origins and destinations of the system's on-demand service, crucial for evaluating the flexibility and responsiveness of transit options.
- **Fixed Route Bus System:** Contains data on boardings and alightings within the fixed route bus system, providing granular insights into route popularity, passenger volumes, and service efficiency.
- **Temporal Scope:** Like the cellular data, it covers over a year of operations, aligning with the cellular data for comprehensive temporal analysis.
- **Role in TEI:** This operational data is key to assessing the 'experience' component of the TEI, offering direct insights into the actual performance of transit services against user needs and expectations.

The integration of these datasets allows for a comprehensive analysis that combines broad behavioral insights with specific transit operational metrics. This dual approach ensures that the TEI reflects both theoretical coverage and practical on-ground service effectiveness. It helps pinpoint where transit services are meeting user needs and where they are falling short, guiding informed decisions about resource allocation and strategy implementation.

The policy and planning implications of this analysis are significant, as they provide a clear basis for making strategic recommendations aimed at enhancing service delivery, improving user satisfaction, and promoting sustainable and equitable transit solutions.

SUMMARY OF TEI CALCULATION OUTCOMES

Transit Effectiveness Index (TEI) analysis reveals several key findings and data points that are critical for understanding the current performance of the Roseville Transit system.

- **Coverage:** The analysis indicates that 90.7% of trips are covered by transit services. This high coverage rate suggests that the transit network has a broad reach, providing access to a significant portion of daily trips within the city.

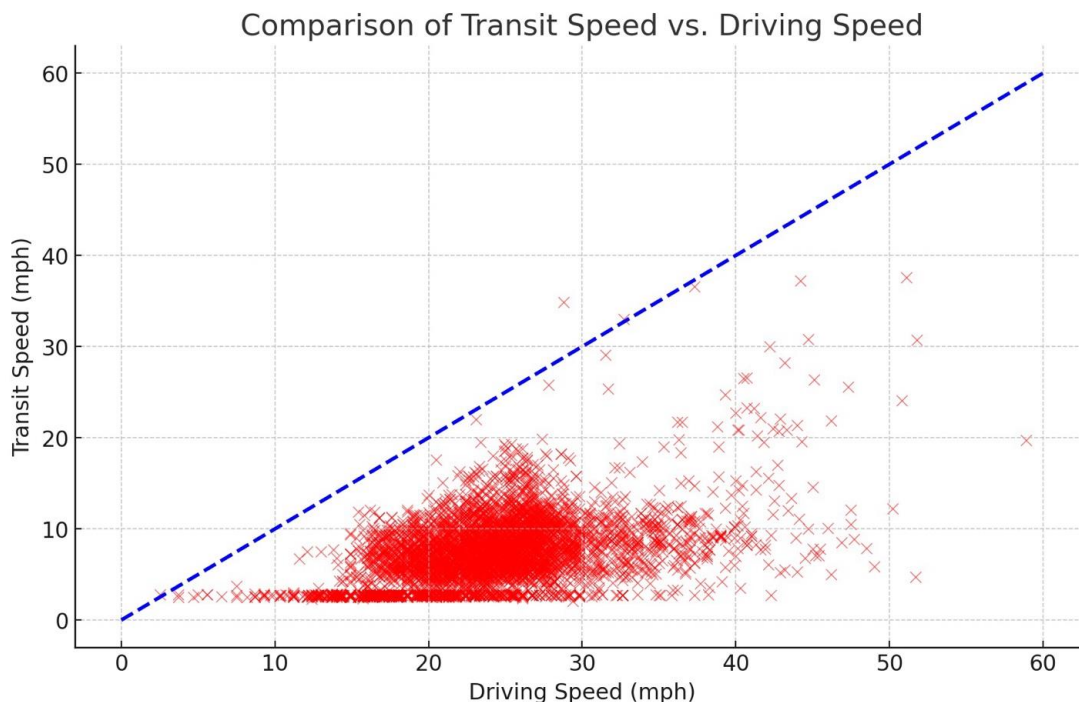


Figure 38 - Driving Speed vs Transit Speed

- Experience: Despite the high coverage, the TEI scores are predominantly negative, with an average score of -1.07. This indicates that while many trips are covered, the quality of the transit experience is lacking. Factors such as travel time, convenience, and reliability are contributing to these negative scores, highlighting areas that need improvement.

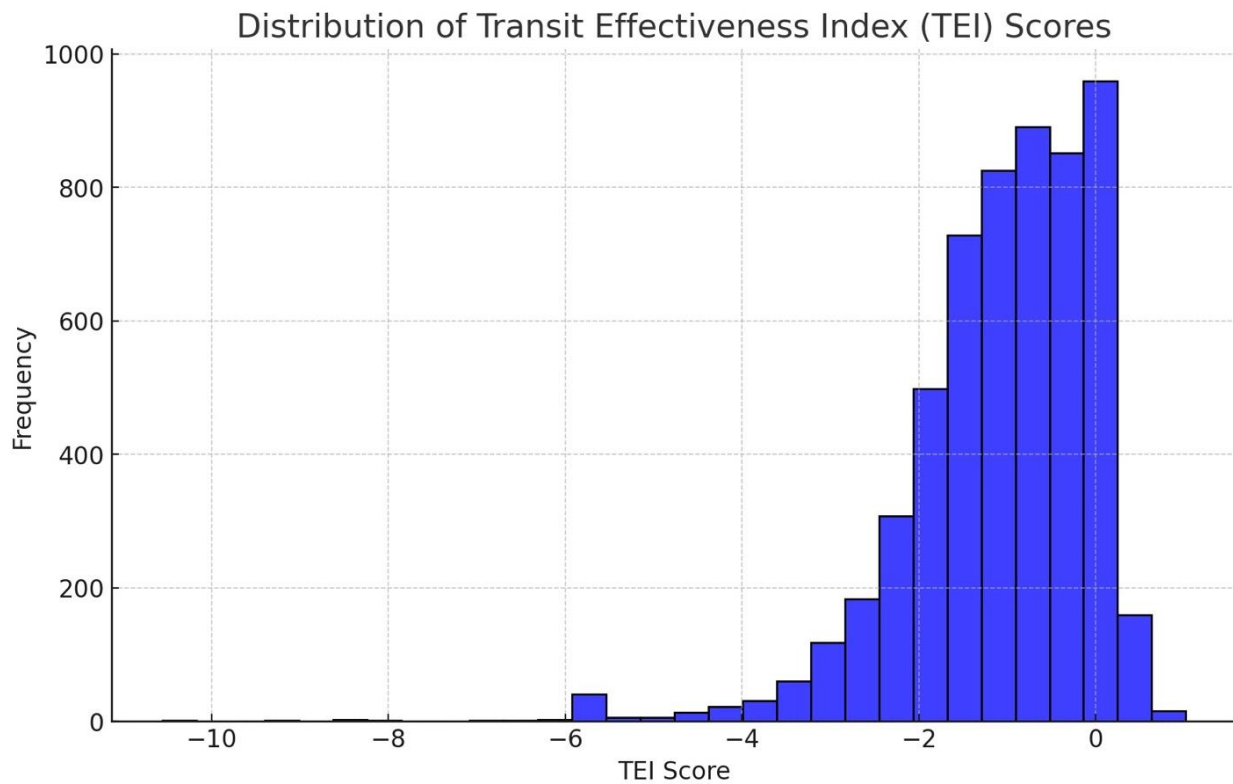


Figure 39 - Transit Effectiveness Index

BEST PRACTICES AND STRATEGIC FOCUS

The city of Roseville, California, is dealing with a complex and multifaceted traffic situation characterized by high traffic volumes, significant commuter patterns, and ongoing infrastructure projects. These factors contribute to the challenges of improving transit speed and frequency. The issue is not solely operational; it is deeply intertwined with the broader traffic dynamics and demographic patterns of the city.

Roseville's busiest roads, such as Galleria Boulevard & Roseville Parkway, Interstate 80 (I-80), and Roseville Parkway, are critical to the city's transportation network. Galleria Boulevard & Roseville Parkway serve as central intersections near major shopping centers, resulting in high traffic volumes. I-80, a major freeway running through Roseville, experiences significant



traffic flow, particularly near Douglas Boulevard, Riverside Drive, and Atlantic Street. The Roseville Parkway is undergoing widening projects to accommodate increasing traffic demand, underscoring its importance in local and through traffic.

Traffic data and analysis from sources like ReplicaHQ and the California State Geoportal highlight the extensive traffic volumes and patterns within the city. Recent traffic news, such as the implementation of special traffic cameras and incidents on I-80, further illustrate the city's ongoing efforts to monitor and manage traffic effectively. Real-time traffic updates from ViaMichelin and KCRA 3 News provide a snapshot of current conditions, including traffic jams, accidents, and roadworks, emphasizing the dynamic nature of traffic management in Roseville.

The demographic profile of Roseville, with a population of approximately 149,000 people, a median household income of \$112,265, and a significant majority of workers driving alone to work with an average commute time of 27.7 minutes, adds another layer to the complexity. The homeownership rate is 68.1%, with a median property value of \$596,700, reflecting the city's suburban characteristics and commuting patterns.

Given this context, the challenge of improving transit speed and frequency in Roseville is not merely an operational issue. It requires a comprehensive approach that addresses the intricate interplay between traffic management, infrastructure development, and demographic trends.

Enhancing transit services involves not only optimizing routes and implementing queue jumpers but also considering the broader traffic and commuter patterns that impact the efficiency and reliability of transit systems.

This section will explore strategies such as the implementation of queue jumpers and the optimization of transit routes to improve transit speed and frequency. By understanding the broader traffic situation and demographic factors, we can develop targeted solutions that enhance the overall transit experience for Roseville's residents.

IMPROVING TRANSIT SPEED AND FREQUENCY

Efficient and reliable transit services are critical to enhancing the overall user experience and encouraging more people to use public transportation. In order to achieve this, it is essential to focus on strategies that can significantly reduce travel times and improve the frequency of transit services. Two key approaches to achieving these goals are the implementation of queue jumpers and the optimization of transit routes. Queue jumpers provide buses with the ability to bypass traffic at intersections, thereby reducing delays and improving reliability. Optimizing transit routes ensures that services are direct, efficient, and aligned with the travel patterns and demands of the community. This section explores these strategies in detail, highlighting their benefits, challenges, and examples of successful implementation.

QUEUE JUMPERS: IMPLEMENTATION OF QUEUE JUMPERS TO REDUCE TRAVEL TIME AND IMPROVE RELIABILITY

A queue jumper is a specialized traffic signal or lane designed to give buses priority at intersections, allowing them to 'jump' ahead of other vehicles waiting at a red light.

This system typically includes a short dedicated lane for buses approaching the intersection, along with a separate traffic signal that gives buses a head start before other vehicles.

- A short segment of a dedicated bus lane is created approaching the intersection. This lane allows buses to bypass queued traffic and position themselves at the front of the line.
- A special traffic signal is installed that provides an early green light for buses, typically a few seconds before the regular green light for all other vehicles. This signal allows the bus to move through the intersection ahead of other traffic.
- Sensors or transponders detect the presence of a bus in the queue jumper lane, triggering the priority signal.



PROS OF QUEUE JUMPERS

- **Reduced Delay:** By allowing buses to bypass traffic queues and move through intersections more quickly, queue jumpers can significantly reduce delays, especially during peak traffic hours.
- **Improved Reliability:** Consistent travel times and reduced delays contribute to more reliable transit service, making public transit a more attractive option for commuters.
- **Cost-Effective:** Implementing queue jumpers is often more cost-effective than constructing extensive dedicated bus lanes, as it involves modifications to existing infrastructure rather than creating entirely new lanes.
- **Flexibility:** Queue jumpers can be implemented at strategic locations where delays are most significant, providing targeted improvements to transit speed and efficiency.

CONS OF QUEUE JUMPERS

- **Limited Impact:** Queue jumpers are effective at reducing delays at intersections but may not address delays caused by traffic congestion between intersections.

- **Infrastructure Modifications:** Implementing queue jumpers requires modifications to existing road infrastructure, including the installation of new traffic signals and potentially reconfiguring lanes, which can be disruptive and costly.
- **Driver Compliance:** Ensuring that other vehicle drivers comply with the dedicated bus lane and do not block the queue jumper can be challenging, requiring enforcement measures.

EXAMPLES OF SUCCESSFUL IMPLEMENTATION

- **West Valley City, UT:** Implemented queue jumps with Transit Signal Priority (TSP) at 13 locations, resulting in a 13–22% reduction in travel times and a 22% increase in bus speed.
- **Portland, OR:** Successfully incorporated queue jump lanes into their transit system, improving bus reliability and reducing delays at key intersections.
- **Toronto, Canada:** Utilized queue jump lanes as part of their Bus Rapid Transit (BRT) strategy, enhancing the efficiency of their transit services.

IMPLEMENTING ON-DEMAND TRANSIT ZONES

WHAT ARE ON-DEMAND TRANSIT ZONES?

On-demand transit zones are areas within a city where transit services operate based on real-time passenger demand rather than fixed schedules and routes. These services typically utilize smaller vehicles, such as shuttles or vans, which can be requested by passengers through mobile apps or other digital platforms. This flexible approach allows transit agencies to provide more responsive and efficient transportation options, particularly in areas with lower demand that may not be well-served by traditional fixed-route services.



HOW DO THEY WORK?

On-demand transit zones function by using technology to match supply with demand in real-time. Passengers can request rides through an app, which then assigns the nearest available vehicle to pick them up. The system optimizes routes and schedules dynamically, ensuring that vehicles are utilized efficiently and passengers experience minimal wait times. Key features of on-demand transit zones include:

MOBILE APPS: PASSENGERS USE APPS TO BOOK RIDES, TRACK VEHICLES, AND RECEIVE REAL-TIME UPDATES.

- **Dynamic Routing:** Routes are continuously optimized based on current demand, reducing unnecessary travel and improving efficiency.
- **Small Vehicles:** Utilization of smaller, more maneuverable vehicles that can navigate narrow streets and pick up passengers closer to their origins and destinations.
- **Integration with Fixed Routes:** On-demand zones can be integrated with traditional fixed-route services, providing first-mile/last-mile connections and enhancing overall transit accessibility.

THE IMPORTANCE OF PROPER PLANNING

Proper planning is crucial for the successful implementation of on-demand transit zones. Key planning considerations include:

- **Identifying Underserved Areas:** Conducting thorough analyses to identify areas with low transit demand or gaps in existing service coverage.
- **Stakeholder Engagement:** Involving community members, local businesses, and other stakeholders in the planning process to ensure the service meets local needs.
- **Technology Infrastructure:** Investing in robust technology platforms to handle ride requests, vehicle dispatching, and real-time tracking.
- **Pilot Programs:** Launching pilot programs to test and refine the service before full-scale deployment, allowing agencies to gather data, address challenges, and make necessary adjustments.

CHALLENGES OF SHIFTING FROM A SUPPLY MODEL TO A DEMAND MODEL

Transitioning from traditional fixed-route services to on-demand transit zones presents several challenges:

- **Operational Complexity:** On-demand services require sophisticated technology and coordination to manage dynamic routing and real-time passenger requests.

- **Resource Allocation:** Allocating resources and managing the fleet efficiently can be challenging, particularly during peak demand periods.
- **Cultural Shift:** Transit agencies and passengers must adapt to a new model of service delivery, which can involve changes in habits and expectations.
- **Cost Considerations:** Initial investments in technology and infrastructure can be significant, although they may be offset by long-term operational savings and increased ridership.

BENEFITS OF PROPERLY IMPLEMENTED ON-DEMAND TRANSIT ZONES

When implemented effectively, on-demand transit zones offer numerous benefits:

- **Increased Accessibility:** Providing flexible and responsive transportation options in areas with low demand or limited fixed-route coverage.
- **Improved Efficiency:** Optimizing routes and schedules in real-time reduces travel times and operational costs.
- **Enhanced Passenger Experience:** Reducing wait times and offering door-to-door service improves overall passenger satisfaction.
- **First-Mile/Last-Mile Solutions:** Complementing fixed-route services by providing connections to major transit hubs, increasing the utility of the broader transit network.

EXAMPLES OF SUCCESSFUL DEPLOYMENTS

- **Arlington, Texas:** Arlington's Via Rideshare program replaced the city's fixed-route bus service with an on-demand transit system. This service uses vans that passengers can book through a mobile app, providing flexible and efficient transportation across the city.
- **West Sacramento, California:** The West Sacramento On-Demand service offers rides within city limits, providing a convenient option for residents to travel without relying on fixed-route services. The service is bookable through a smartphone app and integrates with regional transit options.
- **Jersey City, New Jersey:** Jersey City launched an on-demand transit service in partnership with Via. The service operates within designated zones, allowing residents to book rides through an app and offering connections to key transit hubs.

INVESTING IN USER EXPERIENCE

The user experience in public transit is a critical factor that influences ridership and overall satisfaction. To create a more appealing and efficient transit system, it is essential to focus on two main areas: enhancements in service and technological advancements. By addressing these areas, transit agencies can offer a more reliable, convenient, and pleasant experience for passengers. This section will explore strategies for making trips more direct, reducing wait times, and integrating fixed-route and on-demand services, as well as introducing technology to improve service reliability and information accessibility. Furthermore, leveraging data to create a cycle of continuous improvement will be discussed.

ENHANCEMENTS IN SERVICE

- **Direct Routes and Shorter Travel Times:** One of the key strategies to improve the user experience in public transit is to make trips more direct. By optimizing routes to minimize detours and unnecessary stops, transit agencies can significantly reduce travel times for passengers. This approach ensures that passengers can reach their destinations more quickly and with fewer delays. Implementing direct routes also enhances the reliability of the service, as buses are less likely to encounter disruptions along a streamlined path.
- **Shorter Wait Times:** Reducing wait times is another critical aspect of enhancing the user experience. This can be achieved by increasing the frequency of buses on high-demand routes and implementing on-demand transit services in lower-demand areas. On-demand services allow passengers to request rides in real-time, ensuring that they do not have to wait long periods for the next available bus. By aligning service frequency with passenger demand, transit agencies can provide a more efficient and satisfying experience.
- **Integration of Fixed Routes and On-Demand Services:** Combining fixed-route services with on-demand transit zones creates a comprehensive transit network that caters to varying passenger needs. Fixed routes can serve high-demand corridors, while on-demand zones can cover areas with lower demand or those that are not well-served by traditional routes. This integration ensures that passengers have access to reliable and flexible transportation options, regardless of their location.

TECHNOLOGICAL ADVANCEMENTS

- **Real-Time Information and Reliability:** Introducing technology to improve the reliability of transit services and the availability of information is crucial. Real-time passenger information systems, such as those provided by apps like Transit, CityMapper, and Moovit, offer real-time updates on bus locations, arrival times, and service disruptions. These apps allow passengers to plan their trips more efficiently, avoid delays, and have a more predictable travel experience. Furthermore, real-time information systems enable transit agencies to communicate directly with passengers, providing updates on service changes and other important information.
- **Data-Driven Improvements:** Using data to create a virtuous cycle of improvements is another significant benefit of technological advancements in transit. Data gathered from passenger usage, vehicle locations, and service performance can be analyzed to identify areas for improvement. This continuous feedback loop allows transit agencies to make data-driven decisions that enhance service quality. For example, predictive maintenance systems can use data to anticipate and address vehicle issues before they lead to breakdowns, reducing downtime and ensuring that buses are available when needed.

EXAMPLES OF SUCCESSFUL DEPLOYMENTS

Several cities have successfully implemented technologies to improve the user experience through real-time information and data-driven improvements:

- **San Francisco, California:** The San Francisco Municipal Transportation Agency (SFMTA) uses real-time passenger information systems across its transit network. The NextBus system provides real-time bus arrival predictions, which passengers can access via digital displays at stops, online, or through mobile apps. This technology has significantly improved the reliability and predictability of transit services in the city.
- **Chicago, Illinois:** The Chicago Transit Authority (CTA) has integrated predictive maintenance systems using data analytics to enhance the reliability of its fleet. By analyzing data from vehicle sensors, the CTA can predict and address maintenance issues before they cause service disruptions. This proactive approach has reduced vehicle downtime and improved overall service reliability.

- **London, United Kingdom:** Transport for London (TfL) has implemented the iBus system, which uses GPS technology to provide real-time information on bus locations and estimated arrival times. This data is available to passengers via electronic signs at bus stops, the TfL website, and various mobile apps. Additionally, TfL uses this data to optimize bus routes and schedules, improving service efficiency and passenger satisfaction.
- **Los Angeles, California:** The Los Angeles County Metropolitan Transportation Authority (Metro) utilizes a comprehensive data analytics platform to monitor and enhance its transit services. The Metro's Performance Data Repository collects and analyzes data from various sources, including fare collection systems, vehicle tracking, and passenger feedback. This data-driven approach helps Metro make informed decisions about service improvements and resource allocation.
- **Singapore:** The Land Transport Authority (LTA) in Singapore uses a sophisticated data analytics platform called the Smart Mobility 2030 initiative. This platform integrates data from various sources, including GPS, fare systems, and passenger surveys, to optimize transit operations and improve service quality. Real-time information is provided to passengers through the MyTransport.SG app, which offers real-time bus arrival times, route planning, and service alerts.

CONCLUSION

The analysis of the Roseville transit system highlights a significant disparity between coverage and user experience. With 90.7% of transit routes covering the city, the system provides extensive accessibility. However, the Transit Effectiveness Index (TEI) scores reveal a predominantly negative user experience, indicating that the current service does not meet passenger expectations. The minimum TEI score of -10.56 underscores the dissatisfaction among users, primarily due to lower transit speeds compared to driving.

KEY DATA INSIGHTS

- **Transit Speeds vs. Driving Speeds:** Detailed data analysis shows that transit speeds are generally lower than driving speeds, contributing to the negative TEI scores. This factor is a critical point of concern as it directly impacts the overall attractiveness and competitiveness of public transit.
- **User Dissatisfaction:** The minimum TEI score highlights the significant dissatisfaction among transit users, emphasizing the need for substantial improvements to enhance the user experience.

POLICY CHANGES FOR SUSTAINABLE GROWTH

To address these challenges and foster sustainable growth, several policy changes are essential:

- **Integration of Transit Planning with Urban Development:** Promoting policies that integrate transit planning with urban development can ensure that future growth supports and enhances the transit system. This approach can lead to more transit-oriented development, reducing reliance on personal vehicles and increasing transit ridership.
- **Public-Private Partnerships:** Fostering public-private partnerships is crucial for expanding and improving transit infrastructure. Collaborations with private entities can provide additional resources, innovative solutions, and shared expertise, enhancing the overall transit system's effectiveness.

CALL TO ACTION

Immediate action is necessary to capitalize on the existing coverage and improve the transit experience. Key steps include:

- **Stakeholder Engagement:** Encouraging active engagement with stakeholders, including community members, local businesses, and government entities, ensures that recommendations align with the needs and preferences of the community. Stakeholder input is vital for developing and implementing effective transit improvements.
- **Implementation of Recommendations:** Emphasizing the need for prompt implementation of recommended strategies to enhance transit speed, reliability, and overall user experience. By addressing the identified issues, Roseville can transform its transit system into a more efficient, attractive, and sustainable mode of transportation.

Transit Technology Discussion

INTRODUCTION

The need for advancements in transit technology has become increasingly important in recent years due to several factors. One of the main challenges facing traditional transportation systems is increasing demand. As cities continue to grow and populations become more urbanized, the demand for transportation services has risen significantly. To meet this demand, transit agencies must find ways to improve the efficiency and capacity of their services, while still maintaining high levels of service quality.

Another challenge facing traditional transportation systems is aging infrastructure. Many transit systems were built decades ago and are in need of significant upgrades and modernization. This requires significant investment in new technology and infrastructure to ensure that transit systems can meet the needs of modern society.

Environmental concerns are also driving the need for advancements in transit technology. The transportation sector is a significant contributor to greenhouse gas emissions, which contribute to climate change. To address this, transit agencies are looking for ways to reduce emissions and promote sustainability through the use of clean energy technologies such as electric and hydrogen fuel cell buses.

To address these challenges, transit agencies and transportation providers are turning to technology to improve the efficiency, effectiveness, and sustainability of their services. Advancements in operations, passenger information, fares, and other areas have enabled transit agencies to offer more efficient, personalized, and sustainable transportation options to their customers.

For example, computer-aided dispatch and vehicle location technology allows transit agencies to optimize routing and scheduling in real-time based on demand and traffic conditions. Passenger information technologies such as TransitApp, CityMapper, and Moovit provide real-time transit information to passengers, including arrival times, route planning, and service disruptions. Contactless payment systems and other fare technology advancements provide a more convenient and secure way for passengers to pay for transit services.

On-demand technology advancements such as on-demand routing and scheduling, real-time vehicle tracking, and mobile booking and payment provide more efficient and personalized transportation options. Clean energy advancements such as electric buses, hydrogen fuel cell buses, and alternative fuels help to reduce emissions and promote sustainability.

Despite these advancements, there are also challenges and pitfalls that transit agencies may encounter when deploying new technology. These can include technical challenges, cost overruns, and resistance from customers and employees. However, with careful planning and implementation, transit agencies can successfully deploy new technology and improve the efficiency, effectiveness, and sustainability of their services.

OPERATIONAL ADVANCEMENTS

COMPUTER-AIDED DISPATCH (CAD)

Computer-aided dispatch (CAD) and vehicle location technology have become essential tools for transit agencies to improve operational efficiency and provide a better passenger experience. This report will focus on the most recent advancements in CAD and vehicle location technology.

CAD systems use real-time data to optimize transit operations, including scheduling, dispatching, and vehicle routing. The latest CAD systems are now integrating machine learning algorithms to improve decision-making processes. For example, a system called Transit Signal Priority (TSP) uses machine learning algorithms to predict the optimal time for a transit vehicle to arrive at a traffic signal, improving transit speed and reducing delays. Another example is the integration of CAD systems with passenger information systems, allowing real-time information to be communicated to passengers through digital displays and mobile apps.

VEHICLE LOCATION TECHNOLOGY

Vehicle location technology uses GPS and other sensors to track the location and movement of transit vehicles. The latest advancements in vehicle location technology include the use of real-time location data to optimize vehicle routing and reduce transit travel times. Transit agencies are also using vehicle location data to improve passenger safety, with systems that can automatically detect when a transit vehicle is involved in an accident or is in a potentially hazardous situation. Additionally, transit agencies are implementing predictive maintenance systems that use vehicle location data to identify maintenance issues before they occur, reducing downtime and improving operational efficiency.

Roseville Transit uses GMV (formerly Syncromatics) for its vehicle location technology. This system also provides a small measure of CAD. Modern CAD and vehicle location technologies have become essential tools for transit agencies to improve operational efficiency and provide a better passenger experience. The latest advancements in CAD systems are integrating machine learning algorithms to optimize transit operations, and the latest advancements in vehicle location technology are using real-time data to optimize vehicle routing and improve passenger safety.

The industry's focus on enhancing operational efficiency, improving passenger safety, and reducing travel times is driving innovation and leading to a more sustainable and connected transit system. A more modern system to dispatch and locate Roseville Transit's vehicles could improve operational performance and customer information. However, with the recommendations to deploy on-demand technology, a traditional CAD system is not necessary. Roseville Transit could deploy a technology such as Swiftly to monitor vehicle location.

Swiftly is a transportation technology company that provides real-time transit data, analytics, and communication tools to transit agencies. The company's platform is designed to help transit agencies improve operational efficiency, reduce costs, and enhance the customer experience.



Swiftly's platform includes several features, including real-time vehicle tracking, predictive arrival times, and passenger information displays. These features help transit agencies to optimize their services, reduce wait times, and provide better information to passengers. The platform also includes data analytics tools that allow transit agencies to track ridership, service performance, and other key metrics. This data can be used to optimize transit operations and improve service quality.

One of the key benefits of Swiftly's platform is its ease of integration with existing transit systems. The platform is designed to work with a wide range of transit technologies, including automatic vehicle location systems, fare collection systems, and scheduling systems. This makes it easy for transit agencies to implement the platform and start realizing the benefits of real-time data and analytics.

Swiftly's platform also includes communication tools that allow transit agencies to send real-time service alerts and other information to passengers via text message, email, or push notifications. This helps to improve the customer experience by providing passengers with up-to-date information about their trips.

Overall, Swiftly is a leading provider of real-time transit data, analytics, and communication tools. Its platform helps transit agencies to improve operational efficiency, reduce costs, and enhance the customer experience by providing real-time data and analytics that can be used to optimize transit operations and improve service quality.

ON-DEMAND/MICROTRANSIT TECHNOLOGY

The most recent trend in technology in public transit has been the growth of the on-demand/microtransit space. This technology has significant benefits including:

- **Improved Service Quality:** Microtransit technology can help transit agencies to provide better service to their customers by offering on-demand, flexible, and personalized transportation options. This can help to attract new riders and retain existing ones, leading to increased ridership and revenue.
- **Increased Efficiency:** Microtransit technology can help transit agencies to optimize their services by routing vehicles based on demand, reducing empty miles, and providing more efficient transportation options for passengers. This can help to reduce costs and improve the overall efficiency of the transit network.
- **Expanded Service Coverage:** Microtransit technology can help transit agencies to expand their service coverage to areas that are not currently served by traditional fixed-route transit. This can help to improve access to transportation for underserved populations and reduce congestion on the roadways.
- **Better Data and Analytics:** Microtransit technology can provide transit agencies with better data and analytics on ridership, demand, and service performance. This information can be used to optimize transit operations, improve service quality, and make data-driven decisions about future investments in transit infrastructure.
- **Improved Sustainability:** Microtransit technology can help transit agencies to reduce their environmental impact by offering more efficient transportation options and reducing the number of single-occupancy vehicles on the roadways. This can help to improve air quality, reduce greenhouse gas emissions, and promote sustainable transportation options.

There is no doubt that the deployment of microtransit technology can help transit agencies to improve service quality, increase efficiency, expand service coverage, obtain better data and analytics, and promote sustainability. By leveraging these benefits, transit agencies can improve the overall transit experience for their customers and better serve their communities. These are some of the reasons why the plan recommends a large deployment of microtransit throughout the service area.

The microtransit industry has seen several advancements over the past five years in terms of technology, which have improved the efficiency and effectiveness of these services significantly. Here are some of the key advancements:

- **Real-time Vehicle Tracking:** Real-time vehicle tracking technology has improved significantly over the past 5 years, allowing microtransit providers to track the location of their vehicles in real-time and make more informed decisions about route optimization and scheduling.
- **Mobile Booking and Payment:** Mobile booking and payment technology has become more advanced, allowing passengers to book and pay for rides using their smartphones. This technology has made it easier for passengers to access microtransit services and has streamlined the booking and payment process for providers.
- **Integration with Transit Networks:** Microtransit providers have become more integrated with existing transit networks, allowing passengers to access these services in conjunction with traditional public transit options. This integration has made it easier for passengers to access microtransit services and has improved the overall efficiency of the transit network.
- **On-Demand Routing and Scheduling:** On-demand routing and scheduling technology has become more advanced, allowing microtransit providers to optimize routes in real-time based on demand and traffic conditions. This technology has improved the efficiency of microtransit services and has reduced wait times for passengers.
- **Data Analytics and Machine Learning:** Data analytics and machine learning technology have become more advanced, allowing microtransit providers to analyze data on ridership, traffic, and other factors to optimize their services. This technology has improved the efficiency and effectiveness of microtransit services and has allowed providers to make data-driven decisions about their operations.

Microtransit technologies have improved over the past five years, making these services more efficient, effective, and accessible. By leveraging real-time vehicle tracking, mobile booking and payment, integration with transit networks, on-demand routing and scheduling, and data analytics and machine learning, microtransit providers have been able to improve the customer experience, reduce costs, and increase ridership.

Several companies are currently providing their technology to public transportation agencies in the on-demand/microtransit market. These include:

Via: Via is a transportation technology company that provides on-demand shared ride services for public transit agencies, corporations, and private organizations. Via's platform uses algorithms to optimize routes and reduce wait times, and it offers a range of services, including microtransit, shuttle services, and paratransit.



Here are some of the key features and benefits of Via:

On-Demand Transportation: Via provides on-demand transportation services that allow passengers to book rides in real-time using a mobile app or web-based platform. This allows transit agencies to offer flexible transportation options that can be tailored to the needs of individual riders and can help to reduce wait times and improve the overall customer experience.

Efficient Routing and Scheduling: Via uses advanced algorithms and machine learning to optimize vehicle routing and scheduling in real-time based on demand, traffic conditions, and other factors. This allows transit agencies to offer more efficient transportation options that can reduce costs and improve the overall efficiency of the transit network.

Multi-Modal Integration: Via integrates with other modes of transportation, such as traditional public transit, bike-share, and car-share services, to provide passengers with seamless transportation options. This can help to reduce congestion on the roadways and promote more sustainable transportation options.

Advanced Data Analytics: Via provides transit agencies with advanced data analytics and reporting tools that allow them to analyze ridership, demand, and service performance in real-time. This information can be used to optimize transit operations, improve service quality, and make data-driven decisions about future investments in transit infrastructure.

Customizable Branding and Marketing: Via allows transit agencies to customize the branding and marketing of their microtransit services, including the design of the mobile app, vehicle branding, and marketing materials. This can help to promote the microtransit services to potential riders and increase awareness of the transit agency's brand.

With Via, transit agencies, businesses, and communities have access to on-demand, flexible, and efficient transportation options. By leveraging advanced algorithms and machine learning, multi-modal integration, and advanced data analytics, Via can help transit agencies to improve service quality, increase efficiency, and promote sustainable transportation options.

RideCo is a transportation technology company that provides on-demand, shared ride services for public transit agencies, universities, and corporations. RideCo's platform uses algorithms to optimize routes and reduce wait times, and it offers a range of services, including microtransit, shuttle services, and paratransit.



RideCo's microtransit service is designed to complement existing fixed-route services by providing on-demand transit options in areas with low demand or where fixed-route services are not cost-effective. The service uses a fleet of vehicles, such as vans or minibuses, and allows passengers to book rides through a mobile app. Passengers can pay for rides using their credit or debit cards, and the app displays real-time information about ride availability and estimated pick-up and drop-off times.

RideCo's platform also includes advanced analytics and reporting features that allow transit agencies to track ridership, trip patterns, and service performance. This data can be used to optimize transit operations, improve the customer experience, and reduce costs.

As a leader in the microtransit market, RideCo offers advanced technology solutions that help transit agencies provide more efficient and cost-effective transit services.

Ecolane is a software company that provides demand-response transit scheduling and dispatch software solutions. The company's platform is designed to help transit agencies optimize their operations by improving route efficiency, reducing costs, and enhancing customer service.



Ecolane's software is used by transit agencies of all sizes, from small, rural systems to large, urban systems. The platform offers a range of features, including automated scheduling, dispatching, and real-time tracking of vehicles. The software is also designed to be user-friendly, with a simple, intuitive interface that makes it easy for dispatchers to manage transit operations.

Ecolane's platform is customizable, allowing transit agencies to tailor the software to their specific needs. The platform also includes advanced reporting and analytics features that allow transit agencies to track ridership, service performance, and other key metrics.

Ecolane offers a wide range of features and capabilities that can help transit agencies improve their operations and provide better service to their customers.

Spare Labs is a Canadian-based technology company that offers a range of transportation services, including on-demand transit, paratransit, and microtransit. The company's platform uses machine learning algorithms to optimize transit operations and reduce costs.



Spare Labs has very similar technology to Via and RideCo but also provides flexible contract structures. Spare Labs offers flexible contract structures that can be tailored to the needs and budget of each transit agency. This allows transit agencies to pay for the services they need, when they need them, and adjust their service levels as demand changes.

Other microtransit software technology providers include:

QRyde – Qryde Transportation Software is a transportation management software that helps transit agencies and other transportation providers to manage their operations more efficiently.

The Routing Company (TRC) – Based in Boston, MA, TRC is a growing microtransit software technology provider. TRC differentiates itself by being the only technology provider currently incorporating fixed route connections within its app. This provides seamless mobility throughout the system between modes.

TransLoc – TransLoc is a technology company that provides transit solutions for universities, municipalities, and private organizations. The company offers a range of services, including real-time transit tracking, demand-responsive transit, and microtransit.

DEPLOYING ON-DEMAND/MICROTRANSIT TECHNOLOGY

Assess Transit System Needs: The first step in deploying microtransit technology is to assess the transit system's needs. This involves identifying areas of the transit network where there is low demand or where fixed-route services are not cost-effective. It is also important to identify any gaps in service that can be filled with microtransit. The NextGen Transit Plan has completed this as part of the Existing Conditions report and System Analysis.

Choose a Microtransit Provider: Once the transit system's needs are identified, the next step is to choose a microtransit provider. The provider should have a proven track record in delivering on-demand transit services and should be able to customize their services to meet the transit system's specific needs. The RFP process should not be evaluated only on price, but rather the entire solution including training, marketing support and deployment.

Develop a Service Plan: The transit system and microtransit provider should work together to develop a service plan that outlines the areas of the transit network that will be served by microtransit, the hours of operation, and the fare structure. The service plan should also include a marketing and communication strategy to inform passengers about the new microtransit service.

Launch the Microtransit Service: Once the service plan is developed, the microtransit service can be launched. The transit system and microtransit provider should work together to ensure that the service is reliable and meets the needs of passengers.

Monitor and Evaluate the Service: After the microtransit service is launched, it is important to monitor and evaluate its performance. The transit system should collect data on ridership, trip patterns, and customer satisfaction to ensure that the service is meeting its goals. Based on the data collected, the transit system and microtransit provider can make adjustments to the service to improve its performance.

Expand the Microtransit Service: If the microtransit service is successful, the transit system may consider expanding the service to other areas of the transit network. This could involve adding more vehicles or increasing the hours of operation.

PASSENGER INFORMATION ADVANCEMENTS

In order to provide seamless transit experiences, advancements in passenger information have become increasingly important. Real-time passenger information is becoming more widely available, allowing passengers to track the location of their transit vehicle and estimate arrival times. In addition, transit agencies are implementing mobile ticketing systems, making it easier for passengers to purchase and store tickets on their mobile devices. The use of contactless payment methods has also become more prevalent, reducing the need for physical tickets and cash transactions. Currently Roseville Transit utilizes GMV bus tracking for passenger information, although this is scheduled and not real-time information. There are a variety of new providers who have made advancements in the space including the following:

Transit, previously known as TransitApp, is a mobile app that provides real-time transit data, trip planning, and multimodal options for public transit users. The app offers real-time vehicle tracking, arrival predictions, and service alerts, as well as a user-friendly interface for planning and booking trips. Transit also offers features like bike-share integration, multimodal trip planning, and user-generated feedback. Some of Transit's features include:



Real-time Transit Data: Transit provides real-time transit data, including vehicle locations, arrival predictions, and service alerts. This information is updated in real-time and allows transit users to plan their trips more efficiently and avoid delays.

Multimodal Trip Planning: Transit offers multimodal trip planning, which allows users to plan trips that involve multiple modes of transportation, such as bus, train, bike, and walking. The app provides detailed directions, including walking directions to transit stops and bike-share locations.

User-Friendly Interface: Transit has a user-friendly interface that makes it easy for users to plan and book trips. The app has a clean design and intuitive navigation, which helps users find the information they need quickly and easily.

Integration with Other Transit Technologies: Transit can be integrated with other transit technologies, such as on-demand technologies, to provide a comprehensive view of the transit network. This integration allows transit agencies to provide real-time data and information to passengers, which improves the customer experience and increases ridership.

Bike-Share Integration: Transit also integrates with bike-share programs in some cities, allowing users to find and reserve bikes through the app. This feature promotes multimodal transportation and provides users with additional transportation options.

In general, Transit provides real-time transit data, trip planning, and multimodal options to public transit users. By using Transit, transit users can plan their trips more efficiently, avoid delays, and access multiple modes of transportation. Transit agencies can use Transit to improve the customer experience, increase ridership, and provide better information to passengers.

CityMapper is a mobile app that offers real-time transit data, trip planning, and multimodal options for public transit users in major cities around the world. The app provides real-time vehicle tracking, arrival predictions, and service alerts, as well as a user-friendly interface for planning and booking trips. CityMapper also offers features like bike-share integration, multimodal trip planning, and user-generated feedback. CityMapper provides the same features as Transit, with the addition of:



Citymapper

Real-time Crowdsourced Information: Citymapper also incorporates crowdsourced information from users to provide real-time information about the transit network. This includes information about delays, crowds, and other potential disruptions, which helps users plan their trips more efficiently and avoid delays.

With Citymapper, public transit users have access to real-time transit data, trip planning options, and multimodal options. By using Citymapper, transit users can plan their trips more efficiently, avoid delays, and access multiple modes of transportation. Transit agencies can use Citymapper to improve the customer experience, increase ridership, and provide better information to passengers. CityMapper was recently acquired by Via.

Moovit is a popular mobile app that provides real-time transit data,  **moovit** trip planning, and multimodal options for public transit users in over 3,000 cities around the world. In addition to the benefits of Transit and CityMapper, here are some of the key features and benefits of Moovit:

Accessible Transit Directions: Moovit offers accessible transit directions, which help users with disabilities plan trips that are suitable for their needs. The app provides information about accessible transit options, including wheelchair-accessible routes and facilities.

With Moovit, public transit users have access to real-time transit information, trip planning, and multimodal options. By using Moovit, transit users can plan their trips more efficiently, avoid delays, and access multiple modes of transportation. Transit agencies can use Moovit to improve the customer experience, increase ridership, and provide better information to passengers.

FARE TECHNOLOGY ADVANCEMENTS

Transit fare technology has come a long way in recent years, with advancements in payment methods, fare collection systems, and ticketing technology. These advancements include:

Mobile Ticketing: Mobile ticketing has become increasingly popular among transit riders. It allows passengers to purchase and store transit tickets on their smartphones, eliminating the need for physical tickets or cash transactions. Mobile ticketing systems can also provide real-time passenger information and trip planning features. Transit agencies are now partnering with mobile payment providers to offer mobile ticketing options, such as Apple Pay and Google Wallet.



Contactless Payment: Contactless payment systems, such as Near Field Communication (NFC) and Radio Frequency Identification (RFID), have also become more prevalent in the transit industry. Contactless payment systems allow passengers to tap their payment cards or smartphones on a reader to pay for their fares. Transit agencies are partnering with payment providers to implement contactless payment systems, such as Visa and Mastercard, allowing riders to use their credit or debit cards to pay for transit fares. The next Connect card technology deployment will include contactless payment.

Fare Collection Systems: Fare collection systems have become more efficient and reliable with the implementation of smart card technology. Smart cards use microchips to store value and can be reloaded with funds for future trips. Transit agencies are also implementing open payment systems that allow passengers to pay for fares with contactless payment methods or mobile devices.

Ticketing Technology: Ticketing technology has also advanced, with the implementation of self-service kiosks and ticket vending machines that can print out tickets and reload smart cards. Transit agencies are also testing facial recognition technology for fare payment, which would eliminate the need for physical tickets or payment cards.

CASHLESS FARE COLLECTION

Transit systems around the world are considering doing away with accepting cash on vehicles as major airlines have. There are benefits to this transition including:

1. **Convenience:** Contactless payment methods such as NFC and RFID are quick and easy to use, allowing passengers to simply tap their payment card or smartphone on a reader to pay for their fares. This eliminates the need to carry cash or physically purchase tickets, making the transit experience more convenient for passengers.
2. **Efficiency:** Contactless payment reduces transaction times and speeds up the boarding process, allowing transit vehicles to move more efficiently and reducing delays. This is particularly beneficial during peak travel times when there is a high volume of passengers.
3. **Reduced costs:** Contactless payment systems are less expensive to operate than cash-based systems. The cost of handling and processing cash, including counting, sorting, and transporting, can be significant. Moving towards contactless payment reduces these costs and allows transit agencies to allocate resources more efficiently.
4. **Improved safety:** Cash handling can be a safety issue for transit employees, especially when dealing with large amounts of cash. Moving towards contactless payment reduces the need for cash handling and improves safety for both passengers and employees.
5. **Better data tracking:** Contactless payment systems can provide valuable data for transit agencies, including information on passenger travel patterns and trends. This data can be used to optimize transit routes, schedules, and fare structures, improving operational efficiency and providing a better transit experience for passengers.

Due to the large potential of cash transactions, there are also things transit systems should consider including:

1. **Exclusion of Unbanked Populations:** Moving towards contactless payment systems may exclude individuals who do not have access to bank accounts or credit cards. These individuals may rely on cash to pay for their fares and may be left behind in a cashless system.
2. **Additional Costs:** While contactless payment systems are less expensive to operate in the long run, the initial implementation costs can be significant. This can be a barrier for smaller transit agencies that may not have the resources to make the transition to contactless payment.

3. **Technical Issues:** Contactless payment systems rely on technology, which can be prone to technical issues and outages. If the system experiences a technical failure, passengers may be unable to pay for their fares, causing delays and inconvenience.
4. **Privacy Concerns:** Contactless payment systems may raise privacy concerns for some passengers. Some individuals may be uncomfortable with the idea of their payment and travel data being tracked and stored by transit agencies or payment providers.
5. **Education and Awareness:** Moving towards contactless payment requires education and awareness campaigns to inform passengers about the new payment methods and how to use them. This may be a challenge for transit agencies, particularly if they serve diverse communities with different levels of technological literacy.

Fare technology advancements have made transit payment more convenient and efficient for passengers. The implementation of mobile ticketing, contactless payment, smart cards, and self-service kiosks has improved the transit experience and reduced transaction times. As the transit industry continues to evolve, the focus on improving fare technology will remain a priority, with the goal of providing a seamless, hassle-free payment experience for transit riders.

OTHER TECHNOLOGIES

Autonomous Vehicles: One of the most significant operational advancements in transit technology is the implementation of autonomous vehicles. Autonomous vehicles have the potential to improve efficiency, reduce operational costs, and enhance safety. In 2021, Waymo launched its fully autonomous ride-hailing service in Phoenix, Arizona, making it the first company to offer a commercial service with fully autonomous vehicles. Additionally, transit agencies are implementing predictive maintenance systems to identify maintenance issues before they occur, reducing downtime and improving operational efficiency. While autonomous vehicles are definitely being rolled out, they are not doing so in any meaningful fashion in the U.S. At a certain point, as the technology allows for higher speeds, safer operations, and larger vehicles, Roseville Transit could look into electric autonomous vehicles.



Clean Energy Advancements: The transit industry is moving towards cleaner and more sustainable energy sources. Many transit agencies are investing in electric buses, reducing greenhouse gas emissions and noise pollution. In addition, some transit agencies are testing hydrogen fuel cell technology, which has the potential to provide long-range, zero-emission transit. Solar panels are also being installed on transit stations and rooftops to generate renewable energy.

Social Media Advancements: Social media has become an essential tool for transit agencies to communicate with passengers. Transit agencies are using social media platforms such as Twitter and Facebook to provide real-time service updates, respond to passenger inquiries, and receive feedback. Some transit agencies are also implementing chatbots to provide automated responses to common passenger questions.

Advancements in transit technology are rapidly changing the transit industry. Autonomous vehicles, real-time passenger information, clean energy sources, and social media communication are all playing a significant role in shaping the future of transit. The industry's focus on enhancing operational efficiency, improving the passenger experience, and reducing environmental impacts is driving innovation and leading to a more sustainable and connected transit system.

Fleet Assessment

EXECUTIVE SUMMARY

This report presents a comprehensive fleet assessment for Roseville Transit, evaluating the current fleet's ability to meet future service demands, identifying opportunities for introducing sustainable and efficient transit solutions, and assessing the need for fleet expansion or modernization to improve rider experience. The report delves into the intricacies of the Roseville Transit fleet, scrutinizing various aspects such as vehicle types, operational usage, age, projected mileage, and the urgency of replacements. The analysis is anchored in the latest data, ensuring an accurate representation of the fleet's current state and its alignment with the service demands of the Roseville community.

Key Findings:

- The fleet assessment revealed a broad spectrum of vehicle ages, with some vehicles identified as overdue for replacement.
- The maintenance analysis revealed a moderate positive correlation between high odometer readings and maintenance costs.
- The environmental impact analysis showed that battery electric buses have noticeable environmental benefits over diesel and natural gas buses in the form of fewer greenhouse gas emissions.
- The transition to zero-emission buses in Roseville involves comprehensive planning and significant investment in vehicles and infrastructure. While the initial capital and infrastructure costs are considerable, the long-term benefits of reduced operating costs, alongside the environmental and health benefits, make this transition a pivotal move towards sustainable public transit.

Recommendations:

- Prioritize the replacement of aged vehicles based on age, projected mileage, and operational demands to enhance service reliability, passenger satisfaction, and overall fleet efficiency.
- Make strategic investments in newer, more environmentally friendly vehicles to align with broader environmental goals and community expectations.
- Implement cost-saving measures for maintenance without compromising the quality of service, particularly for high-mileage commuter vehicles.

- Regularly assess the fleet composition to ensure an optimal mix of models that balance service needs and operational efficiency.
- Continuously monitor vehicle usage patterns to make informed decisions about vehicle allocation, potentially redistributing vehicles to balance mileage accumulation and extend the overall lifespan of the fleet.

INTRODUCTION

In alignment with the "Transportation 360" initiative, this fleet assessment for Roseville Transit is not merely an evaluation of our current resources but a strategic step towards realizing our ambitious project goals. These objectives encompass enhancing the overall transit experience, adapting to the dynamic travel patterns of our community, and fostering a more sustainable, efficient, and user-centric transit system. By scrutinizing our fleet against these benchmarks, we aim to ascertain its readiness to support a future-proof, redesigned network that resonates with the evolving needs of both current riders and potential users. This assessment is pivotal in ensuring our fleet's alignment with the envisioned service enhancements, sustainability commitments, and the holistic improvement of urban mobility in Roseville, paving the way for a transit system that is not only responsive to today's demands but also adaptable to tomorrow's opportunities.

Roseville Transit operates a diverse transit fleet, including 16 mid-sized coaches for local routes, 13 larger commuter buses, and 12 buses dedicated to paratransit services, reflecting a recent expansion. The fleet's operations are supported by nine light-duty vehicles. Maintenance, fueling, and washing facilities are centralized at the City Corporation Yard, where all city vehicles are serviced. The transit operations office is located within a city-owned building in the Corporate Yard, while administrative offices are situated at a recently constructed facility on Vernon Street. Additionally, the city oversees a covered bus facility in Lincoln, funded by FTA grants, for which Roseville provides regular oversight.

The objectives for the fleet assessment of Roseville Transit are:

- Evaluate the current fleet's ability to meet future service demands.
- Identify opportunities for introducing sustainable and efficient transit solutions.
- Assess the need for fleet expansion or modernization to improve rider experience.
- Ensure the cost-effectiveness of fleet operations.
- Align the fleet with Roseville's strategic goals for enhanced mobility and environmental sustainability.

CURRENT FLEET ANALYSIS

This report delves into the intricacies of the Roseville Transit fleet, scrutinizing various aspects such as vehicle types, operational usage, age, projected mileage, and the urgency of replacements. The analysis is anchored in the latest data, ensuring an accurate representation of the fleet's current state and its alignment with the service demands of the Roseville community.

FLEET COMPOSITION AND OPERATIONAL USAGE

Roseville Transit operates a diverse fleet comprising Local, Commuter, and Demand Response vehicles, each catering to specific transit needs within the community. The Local segment includes buses designed for intra-city routes, facilitating short to medium-distance travel. Commuter vehicles serve longer routes, connecting Roseville with adjacent regions, while Demand Response services offer flexible routing to accommodate passengers with special requirements.

The fleet's operational usage is closely monitored through daily mileage projections, which are derived from historical odometer readings adjusted for weekdays of service. This metric offers insights into each vehicle's workload, highlighting patterns that influence maintenance schedules and replacement planning.

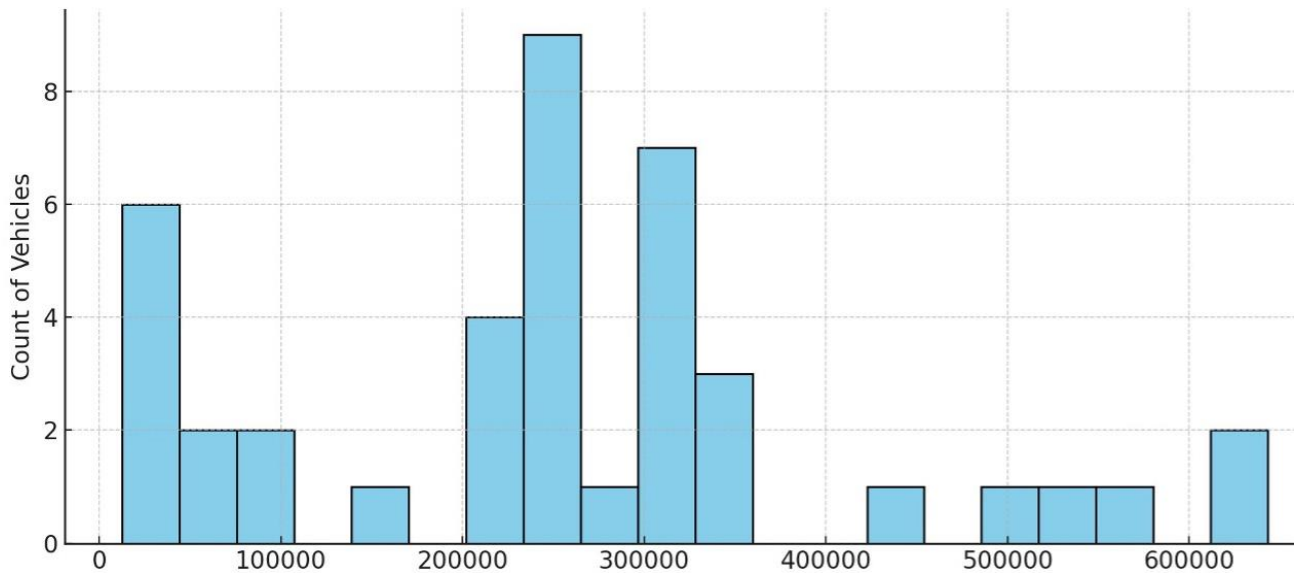


Figure 40 - Distribution of Projected Odometer Readings

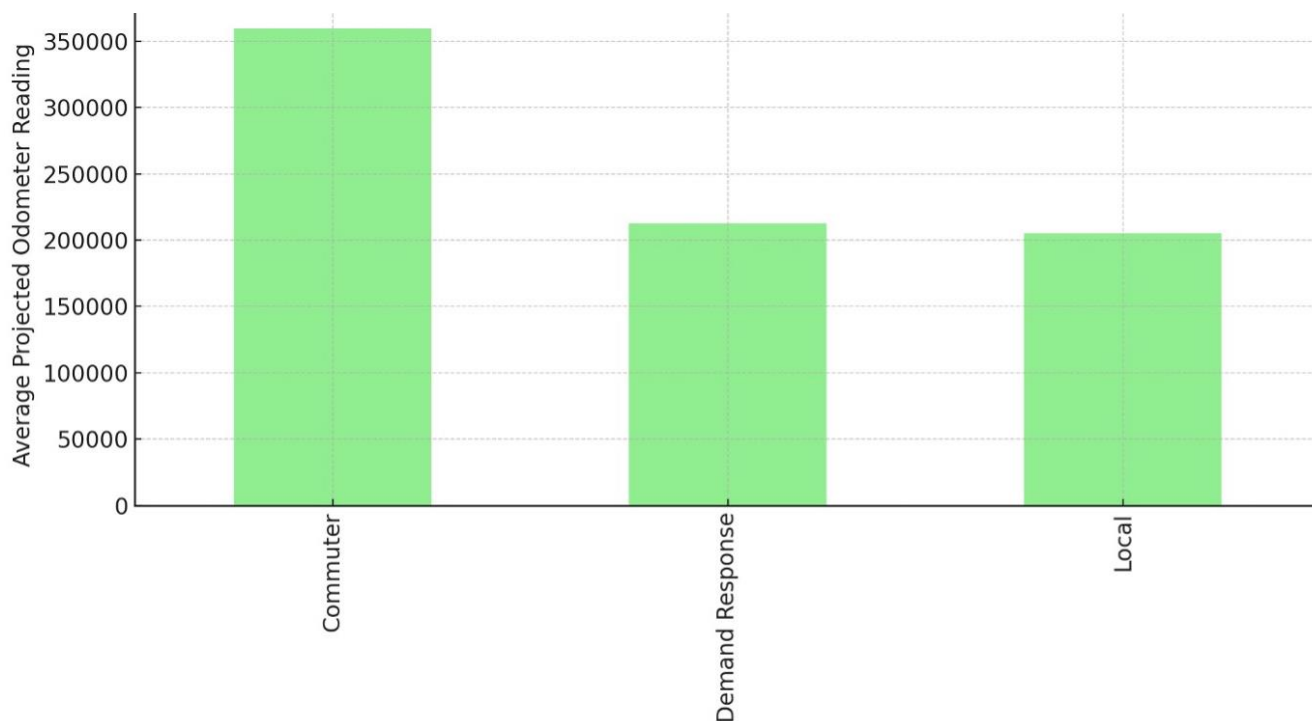


Figure 41 - Average Projected Odometer Reading by Mode/Type

VEHICLE AGE AND REPLACEMENT ANALYSIS

A critical aspect of the fleet assessment is the evaluation of vehicle ages, which reveals a broad spectrum across the fleet. The analysis identifies vehicles that have surpassed their expected service life, marking them as overdue for replacement. This designation is pivotal for prioritizing fleet renewal efforts, ensuring that older, less reliable vehicles are systematically phased out in favor of newer, more efficient models.

The histogram reveals a wide spread in the projected odometer readings across the fleet, indicating a varied degree of usage among vehicles. The presence of vehicles on the higher end of the mileage spectrum highlights those that have been in service for an extended period or have been subject to heavy use. These vehicles may be approaching or have exceeded their useful life expectancy, signaling a need for closer inspection, increased maintenance, or prioritization for replacement.

- The histogram and average odometer readings indicate that the local fleet continues to exhibit a broad range of usage, with certain vehicles showing higher odometer readings, suggesting intensive use on specific routes.

- The commuter fleet, as shown in the chart, maintains higher average odometer readings due to the nature of commuter services, which involve longer route distances.
- The 12 demand response vehicles display a variation in usage patterns, within the data confirming that some vehicles have lower odometer readings due to their age, reflecting the ad-hoc nature of demand response services.

PROJECTED MILEAGE AND REPLACEMENT URGENCY

Projected mileage calculations extend the analysis by estimating the current odometer readings for each vehicle, based on their historical usage patterns. This forward-looking metric serves as a barometer for assessing vehicle wear and tear, informing decisions on whether a vehicle's operational life can be extended or if replacement is imminent.

The urgency of replacements is encapsulated in the "Overdue for Replacement" status, which directly impacts fleet reliability and service quality. Vehicles marked as "Yes" in this category are prime candidates for immediate replacement, aligning fleet composition with operational demands and safety standards.

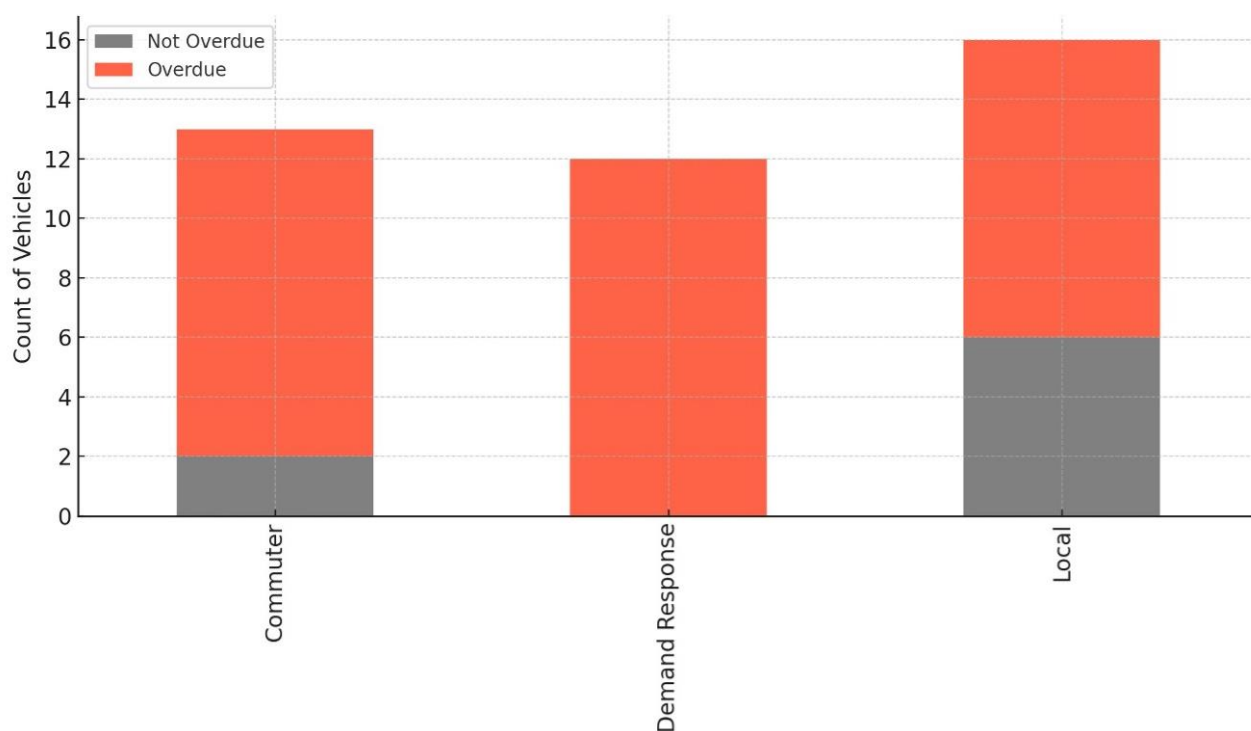


Figure 42 - Count of Vehicles Overdue for Replacement by Mode/Type

The stacked bar chart shows the number of vehicles overdue for replacement, categorized by mode/type. It's evident that a large portion of the vehicles in each category is overdue for replacement, with the Local and Commuter categories having a notable number of overdue vehicles and all Demand Response vehicles due for replacement. This indicates the need for immediate attention to fleet renewal efforts, particularly in these two categories, to maintain service reliability and efficiency.

- **Local:** A significant portion of the local fleet is identified as overdue for replacement. The chart illustrates that out of the total local vehicles, a specific number are marked overdue, indicating a pressing need for fleet renewal in this segment to maintain service standards and reliability.
- **Commuter:** The commuter service shows a smaller proportion of vehicles overdue for replacement compared to the local segment. This suggests that the commuter fleet might be newer or has been more recently updated, but still, a certain number of commuter vehicles are overdue, highlighting areas where targeted investments are needed.
- **Demand Response:** The demand response category also exhibits a notable number of vehicles overdue for replacement. This underscores the importance of updating this segment of the fleet to ensure that vehicles meet the unique operational requirements of demand response services, such as high levels of accessibility and adaptability.

CONCLUSION AND STRATEGIC RECOMMENDATIONS

The comprehensive fleet analysis underscores the necessity for a strategic approach to fleet management, emphasizing the replacement of aged vehicles and the adoption of advanced vehicle technologies. By prioritizing replacements based on age, projected mileage, and operational demands, Roseville Transit can enhance service reliability, passenger satisfaction, and overall fleet efficiency.

Strategic investments in newer, more environmentally friendly vehicles can also propel Roseville Transit towards a sustainable future, aligning with broader environmental goals and community expectations.

MAINTENANCE

In this section, we delve into an in-depth analysis of the annual maintenance activities for the Roseville Transit fleet, focusing on individual vehicles identified by their Unit IDs. Our objective is to uncover key metrics that shed light on the health and operational efficiency of the fleet, including the average odometer reading at the time of repair, the average cost associated with maintenance activities, and the frequency of repair instances for each vehicle within a given year.

By examining these parameters, we aim to understand the patterns and trends in vehicle maintenance, which are pivotal in ensuring the reliability and performance of the transit service. This analysis not only helps in identifying potential areas for improvement but also aids in strategic planning for future maintenance schedules, budget allocations, and fleet management decisions.

Through a detailed examination of the maintenance records, we seek to enhance operational efficiency, reduce downtime, and ensure a high level of service quality and safety for Roseville Transit's fleet. This section will provide fleet managers, maintenance teams, and stakeholders with valuable insights necessary for informed decision-making and long-term fleet sustainability.

OVERALL MAINTENANCE TRENDS

The initial analysis of the fleet's maintenance data revealed a broad range of average odometer readings at the time of repair, indicating varied levels of wear and tear across different vehicles. A moderate positive correlation (approximately 0.328) was observed between high odometer readings and maintenance costs, suggesting that vehicles with higher mileage tend to incur higher maintenance expenses. This relationship underscores the importance of monitoring vehicle usage and implementing proactive maintenance strategies to manage costs effectively.

A more granular examination of the data by vehicle model highlighted significant differences in average odometer readings and maintenance costs across various models. High-mileage models such as the Commuter fleet demonstrated the fleet's extensive utilization, with those vehicles also incurring notably higher average maintenance costs.

MODEL-SPECIFIC ANALYSIS

- Champion' and 'ARBOC' models used for demand-response show moderate average odometer readings and maintenance costs, indicating efficient usage and maintenance practices.
- Gillig Local models remain a high-mileage model with moderate maintenance costs, suggesting it is a durable and cost-effective option for local transit services.

- Gillig Commuter vehicles exhibits the highest average odometer readings, underlining the intensive use of these models for commuter services. The maintenance costs for this combined category are slightly higher, reflecting the extensive wear and tear from high mileage and potentially more complex repair needs.

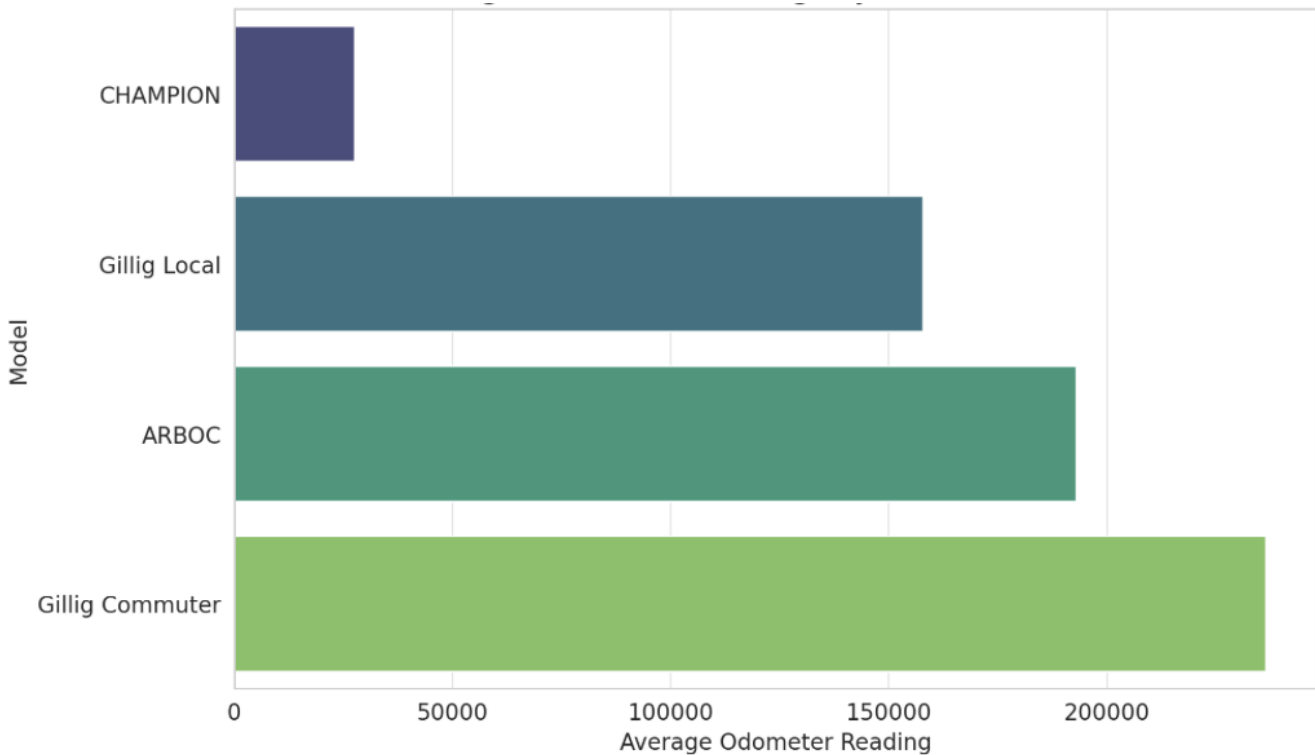


Figure 43 - Odometer Reading by Fleet Type

The maintenance costs for Commuter vehicles are among the highest, likely due to the intensive use and the nature of commuter services, which may require more frequent or extensive maintenance. This underscores the importance of proactive and efficient maintenance strategies for these high-usage vehicles.

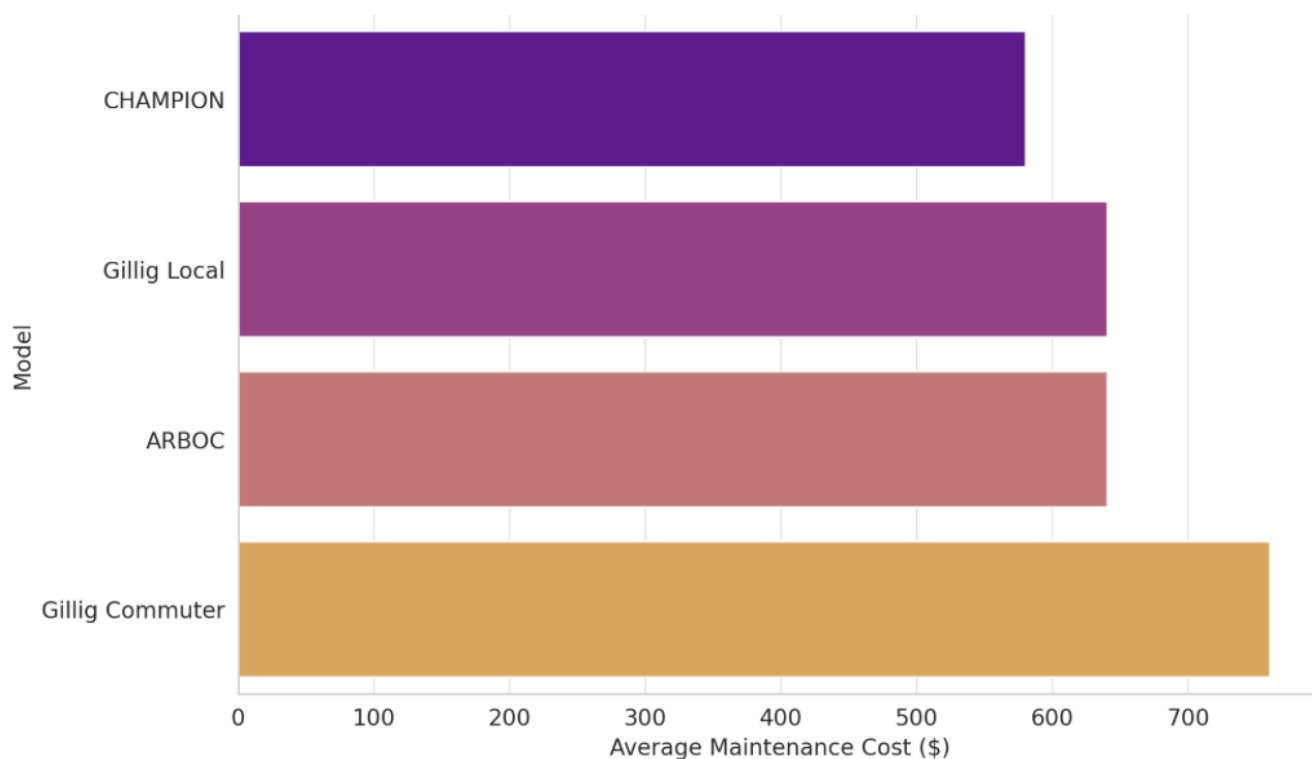


Figure 44 - Average Maintenance Cost by Model

MAINTENANCE RECOMMENDATIONS

- **Enhanced Maintenance for the Commuter fleet:** Prioritize preventive and predictive maintenance for the fleet to address the high wear and tear and maintain service reliability.
- **Cost Management Strategies:** Implement cost-saving measures for maintenance without compromising the quality of service, particularly for high-mileage commuter vehicles.
- **Fleet Optimization:** Regularly assess the fleet composition, considering the high usage and maintenance costs of commuter vehicles, to ensure an optimal mix of models that balance service needs and operational efficiency.
- **Usage Analysis:** Continuously monitor vehicle usage patterns to make informed decisions about vehicle allocation, potentially redistributing vehicles to balance mileage accumulation and extend the overall lifespan of the fleet.

MAINTENANCE COSTS

The maintenance of a public transit fleet represents a significant operational expense, influenced by various factors including vehicle usage, service mode, and fleet age. This report delves into the Roseville Transit fleet's maintenance costs, aiming to elucidate the relationship between operational mileage and maintenance expenses across different service modes. Understanding these dynamics is crucial for optimizing maintenance strategies and ensuring the fleet's cost-effective and reliable operation.

METHODOLOGY

Our analysis utilized comprehensive maintenance and operational data from the Roseville Transit fleet, encompassing detailed records of maintenance activities, associated costs, and vehicle mileage. The methodology involved several key analytical steps:

- **Aggregation:** Maintenance costs and operational mileage were aggregated by year and by service mode (Commuter, Demand Response, Local) to facilitate mode-specific analyses.
- **Cost Efficiency Assessment:** The maintenance cost per mile was calculated to evaluate the cost efficiency of maintenance activities across the fleet.
- **Operational Volume Analysis:** Total miles operated by the fleet, segmented by service mode and year, were analyzed to understand operational trends.
- **Cost Escalation Analysis:** The increase in maintenance costs per 10,000 miles operated was calculated for each service mode to assess how maintenance expenses scale with mileage.

This structured approach enabled a comprehensive examination of maintenance costs in relation to operational patterns and service modes.

MILES OPERATED BY MODE PER YEAR

Operational volumes varied significantly across service modes and over the years. The analysis highlighted a marked reduction in miles operated in 2021, attributable to the pandemic's impact on transit services. A subsequent recovery in operational volume was observed in the following years.

- **2021:** A total of approximately 221,700 miles were operated, reflecting reduced transit services due to pandemic-related restrictions.
- **2022:** Operational volume increased to 758,222 miles, indicating a return to more regular transit operations.
- **2023:** The fleet operated 768,749 miles, maintaining the previous year's elevated level of service.

The chart below visually represents these trends, illustrating the fluctuation in miles operated by the Roseville Transit fleet over the analyzed period.

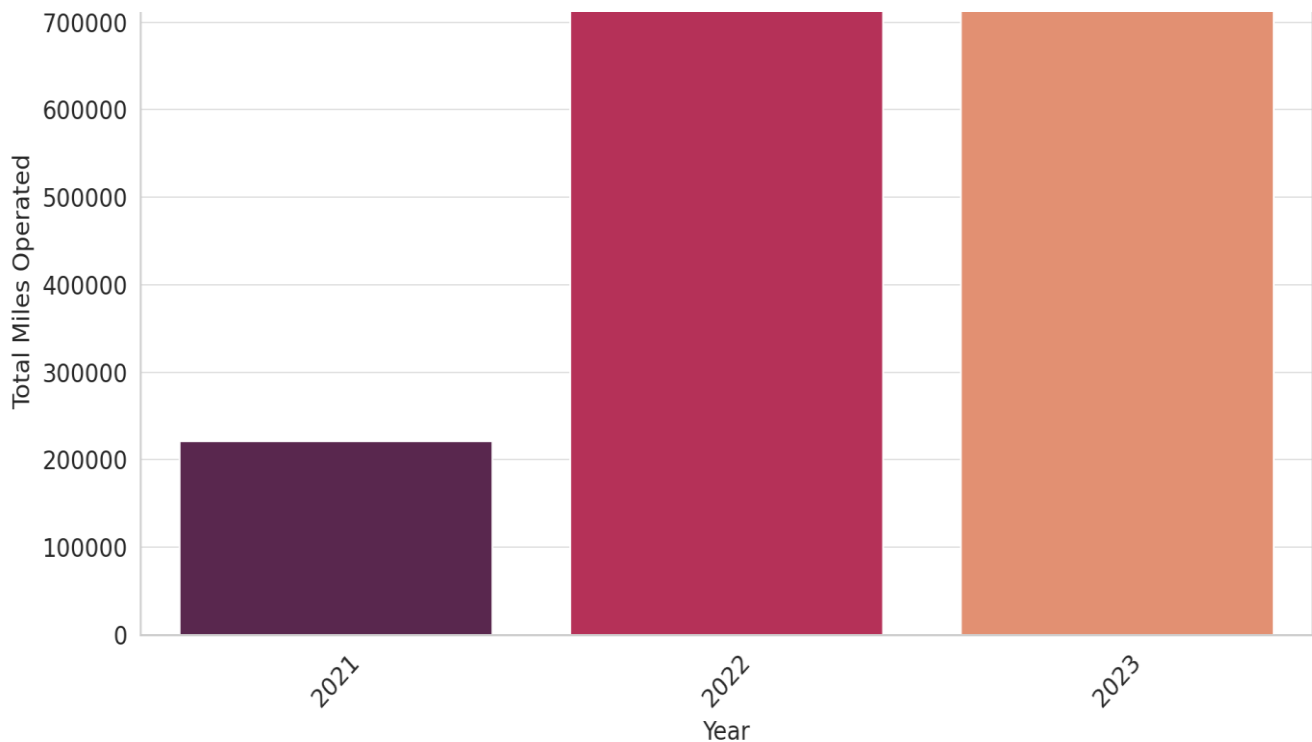


Figure 45 - Miles Operated by Mode and Year

MAINTENANCE COST PER YEAR BY MODE

The analysis of maintenance costs by year and service mode revealed distinct expenditure patterns, reflecting the diverse operational demands and maintenance requirements of the fleet. Key findings include:

- **Yearly Trends:** Maintenance costs increased significantly from 2021 to 2023, with a notable peak in 2022. This trend may be associated with the increased operational volume and potentially deferred maintenance activities during the pandemic.
- **Mode-Specific Costs:** Variations in maintenance costs across service modes were observed, with Local services generally incurring higher maintenance expenses, likely due to the intensive operational demands of urban transit.

The following chart provides an overview of these annual maintenance costs, offering insights into the financial implications of fleet operations and maintenance strategies.

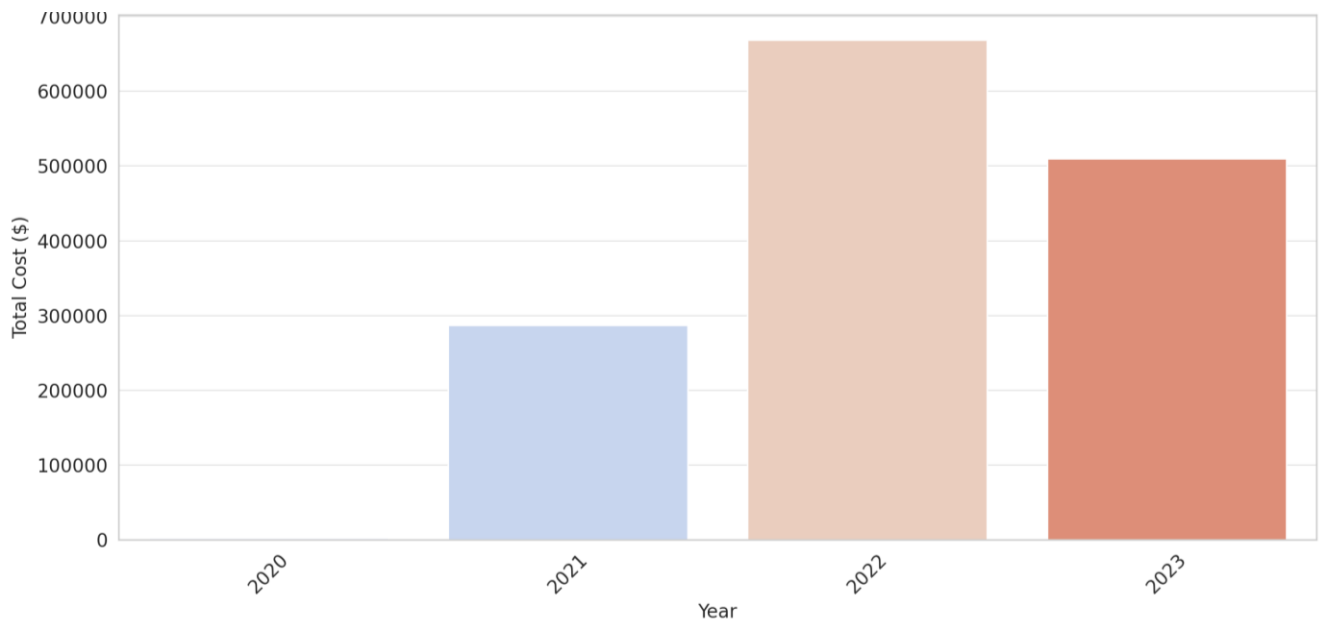


Figure 46 - Total Maintenance Cost by Year

MAINTENANCE COST INCREASE FOR EVERY 10,000 MILES BY MODE

A critical aspect of the analysis was understanding how maintenance costs escalate with additional operational mileage, particularly in the context of different service modes. The chart below depicts the increase in maintenance costs for every 10,000 miles operated, segmented by service mode, underscoring the varying cost efficiencies across Commuter, Demand Response, and Local services.

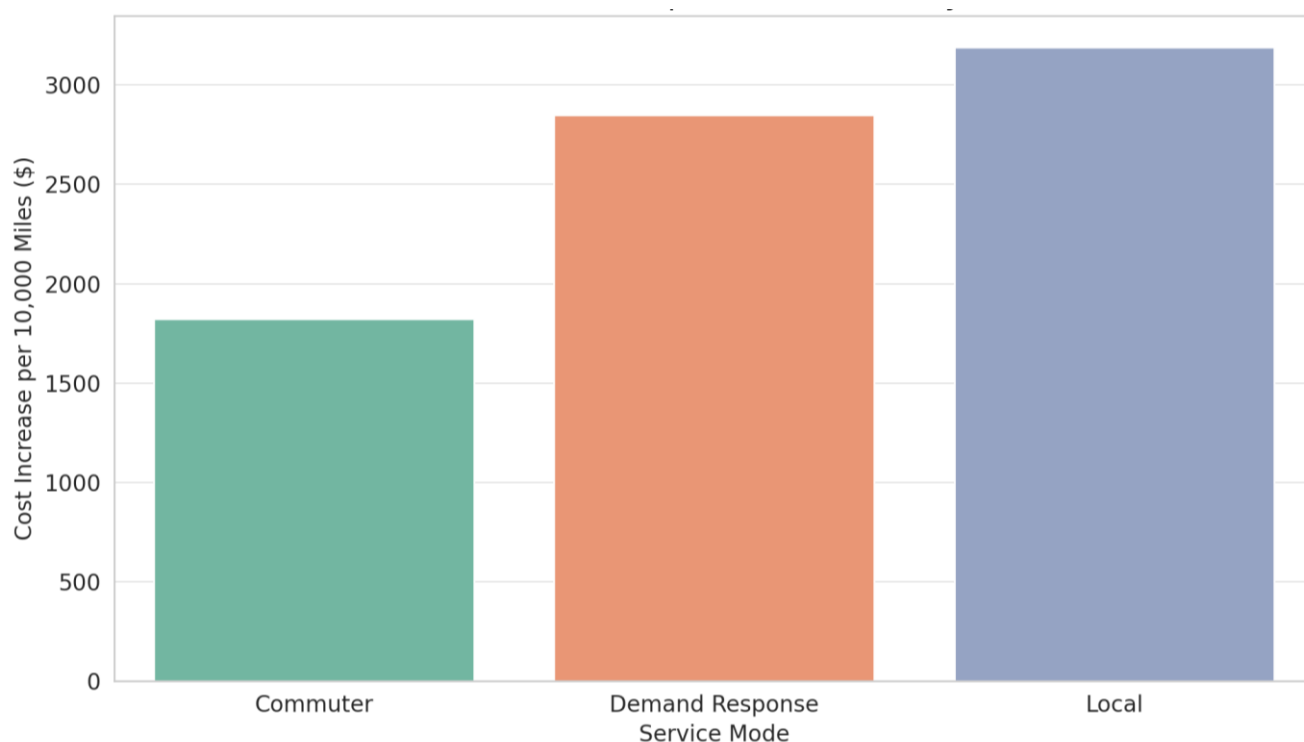


Figure 47 - Maintenance Cost Increase per 10,000 Miles by Service Mode

As transit fleets age and accumulate operational mileage, maintenance costs tend to increase. This analysis delves into the relationship between the miles operated and the corresponding maintenance costs across different fleet types (Modes), namely Commuter, Demand Response, and Local services, to understand the cost implications of fleet aging.

Our analysis indicates that maintenance costs do not increase uniformly across different service modes as vehicles accumulate mileage. Specifically:

- Commuter Services:** Maintenance costs for commuter services increase by approximately \$1,823 for every 10,000 miles operated. This suggests a relatively moderate rate of cost increase, potentially due to the consistent, long-distance nature of commuter routes that might lead to more predictable and manageable wear and tear.
- Demand Response Services:** These services exhibit a higher rate of maintenance cost increase, at \$2,850 per 10,000 miles. The variable nature of demand response services, which often entail door-to-door transportation in diverse operational environments, may contribute to this steeper cost curve, indicating a more substantial impact of mileage accumulation on maintenance costs.

- **Local Services:** Local services face the highest increase in maintenance costs, with \$3,190 added for every 10,000 miles operated. The stop-and-go nature of local transit, combined with frequent passenger loading and unloading, likely exacerbates vehicle wear and tear, leading to a more pronounced increase in maintenance costs as mileage accumulates.

IMPLICATIONS OF FLEET AGING

The analysis underscores the financial implications of operating an aging transit fleet, particularly for Local and Demand Response services. As vehicles accumulate operational mileage, the maintenance costs escalate, potentially in an exponential manner, underscoring the importance of strategic fleet management and maintenance practices.

COST INCREASE TREND ANALYSIS

The cost increase per 10,000 miles does not appear to be linear across the different modes. Instead, the rate of increase suggests a more complex relationship, potentially exponential, especially for Demand Response and Local services, where the operational demands and varied environments might lead to escalating maintenance needs as vehicles age and accumulate mileage.

CONCLUSION

The comprehensive analysis of the Roseville Transit fleet's maintenance costs in relation to operational mileage and service modes revealed several key insights:

- **Operational Volume Impact:** The significant fluctuation in miles operated, particularly the reduction in 2021 due to the pandemic and the subsequent recovery, underscores the impact of external factors on transit operations.
- **Maintenance Cost Trends:** The overall increase in maintenance costs from 2021 to 2023, with variations across service modes, highlights the financial challenges associated with maintaining an active and diverse transit fleet.
- **Cost Escalation by Service Mode:** The differential increase in maintenance costs per 10,000 miles operated across service modes illustrates the nuanced relationship between operational practices and maintenance expenses. Local services, in particular, face the steepest increase in maintenance costs with additional mileage, indicating the high wear and tear associated with urban transit operations.

FLEET AND FUEL ALTERNATIVES

CLEAN ENERGY FLEET REQUIREMENTS

California has adopted several policies and regulations to support the transition of public transit vehicles to zero-emission and low-emission technologies. These policies and regulations aim to reduce greenhouse gas emissions, improve air quality and public health, and create economic opportunities and benefits for the state. Some of the key policies and regulations are:

- The Innovative Clean Transit Regulation, which requires public transit agencies to gradually transition to 100 percent zero-emission bus fleets by 2040. The regulation applies to all transit buses, including cutaways, over-the-road coaches, and articulated buses. Transit agencies must submit a rollout plan demonstrating how they plan to purchase clean buses, build out necessary infrastructure, and train the required workforce. The regulation also provides incentives and funding opportunities for transit agencies to adopt zero-emission buses and charging infrastructure.
- The Advanced Clean Trucks Program, which requires manufacturers producing Class 2b–8 vehicles in California to sell zero-emission trucks as an increasing percentage of their sales from 2024 to 2035. The program also requires large entities, such as retailers, manufacturers, and government agencies, to report information about their fleet operations and to purchase zero-emission trucks for their fleets. The program covers transit buses and shuttle buses that are not subject to the Innovative Clean Transit Regulation.
- The Executive Order N-79-20, which sets a goal of 100 percent of in-state sales of new passenger cars and trucks to be zero-emission by 2035, 100 percent of medium- and heavy-duty vehicles to be zero-emission by 2045, and 100 percent of off-road vehicles and equipment to be zero-emission by 2035 where feasible. The order also directs state agencies to develop and implement strategies to achieve these goals, as well as to support the expansion of zero-emission vehicle infrastructure, increase access and affordability of zero-emission vehicles, and protect public health and environmental justice communities.

- The Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP), which provides vouchers to help offset the incremental cost of purchasing hybrid and zero-emission trucks and buses. The vouchers range from \$10,000 to \$220,000, depending on the vehicle type, weight class, and location. The project also offers additional incentives for fleets operating in disadvantaged communities, as well as for replacing older diesel vehicles.

These policies and regulations demonstrate California's commitment to advancing clean transportation and addressing climate change. By supporting the adoption of alternative vehicles and fuels, the state aims to reduce its dependence on fossil fuels, improve air quality and public health, and create economic opportunities and benefits for its residents.

EXAMPLES OF SACRAMENTO-AREA AGENCY EFFORTS

- Sacramento Regional Transit District (SacRT) has submitted a Zero-Emission Bus Rollout Plan to the California Air Resources Board (CARB), showing how it plans to achieve a full transition to zero-emission buses (ZEBs) by 2040. SacRT has also applied for grants and incentives to support the acquisition of ZEBs and charging infrastructure. SacRT currently operates 12 battery electric buses and plans to purchase 20 more by 2023.
- Yolo County Transportation District (YCTD) has partnered with the University of California, Davis to launch the Causeway Connection, a zero-emission bus service that connects the two communities using 12 electric buses. The service aims to reduce traffic congestion and greenhouse gas emissions, as well as to provide a convenient and affordable transportation option for students, faculty, staff, and residents.
- El Dorado Transit has received a \$2.5 million grant from the Federal Transit Administration to purchase two electric buses and four charging stations. The grant will help the agency reduce its fuel and maintenance costs, as well as its environmental impact. El Dorado Transit expects to receive the electric buses by late 2023 or early 2024.

EVALUATION OF ALTERNATIVE FUEL TYPES

BATTERY ELECTRIC BUSES (BEBs)

These buses use batteries to store electricity and power an electric motor. They have no tailpipe emissions and can reduce greenhouse gas emissions by 60% to 90% compared to diesel buses, depending on the electricity source. They also have lower operating and maintenance costs than diesel buses. However, they require charging infrastructure and may have limited range and payload capacity. Some examples of cities and countries that have deployed or plan to deploy BEBs are:

- China, which has the largest BEB fleet in the world, with more than 400,000 buses as of 2019. The city of Shenzhen has achieved a 100% electrification of its bus fleet, with over 16,000 BEBs.
- Chile, which has the largest BEB fleet in Latin America, with more than 800 buses as of 2020. The buses operate in the capital city of Santiago and are part of the country's plan to electrify its entire public transport system by 2040.
- The United States, which had about 650 BEBs in operation as of 2019, and more than 2,000 on order or planned. The cities of Los Angeles, New York, and Seattle have committed to transition to 100% zero-emission buses by 2030.

HYDROGEN FUEL CELL ELECTRIC BUSES (FCEBs)

These buses use hydrogen as a fuel to generate electricity and power an electric motor. They have no tailpipe emissions except water vapor and can reduce greenhouse gas emissions by 50% to 80% compared to diesel buses, depending on the hydrogen source. They also have longer range and faster refueling time than BEBs. However, they require hydrogen production, distribution, and refueling infrastructure, and have higher purchase and fuel costs than BEBs. Some examples of cities and countries that have deployed or plan to deploy FCEBs are:

- Germany, which has the largest FCEB fleet in Europe, with more than 80 buses as of 2020. The country aims to have 1,000 FCEBs on the road by 2025 and 5,000 by 2030.
- South Korea, which has the largest FCEB fleet in Asia, with more than 50 buses as of 2020. The country plans to increase the number of FCEBs to 2,000 by 2022 and 40,000 by 2040.
- Canada, which has the largest FCEB fleet in North America, with more than 20 buses as of 2020. The buses operate in the cities of Vancouver and Whistler and are part of the country's strategy to decarbonize its transportation sector.

OTHER ALTERNATIVE FUELS AND VEHICLES

These include biodiesel, renewable diesel, ethanol, liquefied petroleum gas (LPG), compressed natural gas (CNG), and liquefied natural gas (LNG) buses, as well as hybrid electric buses (HEBs) and diesel hydraulic hybrid vehicles (HHVs). These options can offer some environmental and economic benefits compared to conventional diesel buses, depending on the feedstock, production process, and vehicle technology. However, they may not be able to achieve deep decarbonization of the transport sector, as they still produce tailpipe emissions and require fossil fuel or biomass inputs. Some examples of cities and countries that have deployed or plan to deploy these options are:

- Brazil, which has the largest ethanol bus fleet in the world, with more than 500 buses as of 2019. The buses run on hydrous ethanol, which is produced from sugarcane and has lower greenhouse gas emissions than diesel.
- India, which has the largest CNG bus fleet in the world, with more than 50,000 buses as of 2019. The buses operate in several cities, such as Delhi, Mumbai, and Ahmedabad, and are part of the country's efforts to reduce air pollution and oil imports.
- Sweden, which has the largest biogas bus fleet in Europe, with more than 2,000 buses as of 2019. The buses run on biogas, which is produced from organic waste and has lower greenhouse gas emissions than diesel.

Table 1 - Pros and Cons of Fuel Types

Fuel Type	Pros	Cons
Battery electric	High energy efficiency (85-90%)	High upfront cost of vehicles and infrastructure
	Low operating and maintenance costs	Limited range and payload capacity
	Zero tailpipe emissions	Charging time and availability
	Reduced noise and vibration	Temperature sensitivity
Hydrogen fuel cell	Long range and fast refueling time	High upfront cost of vehicles and infrastructure
	Zero tailpipe emissions	High fuel cost and low availability
	Reduced noise and vibration	Low energy efficiency (60-70%)
	Potential for renewable hydrogen production	Hydrogen production and distribution challenges
Other alternative fuels (biodiesel, renewable diesel, ethanol, LPG, CNG, LNG)	Lower emissions than diesel (depending on the fuel source and process)	Still produce tailpipe emissions and require fossil fuel or biomass inputs
	Potential for renewable or low-carbon fuel production	May require additional infrastructure and vehicle modifications
	May offer some cost savings compared to diesel	May not achieve deep decarbonization of the transport sector
Hybrid electric and diesel hydraulic hybrid		Still produce tailpipe emissions and require fossil fuel inputs
	Lower fuel consumption and emissions than diesel	
	Reduced noise and vibration	Higher upfront cost than diesel
	No additional infrastructure required	Higher maintenance cost than diesel

INFRASTRUCTURE CONSIDERATIONS

The deployment of alternative vehicles, especially battery electric buses (BEBs) and hydrogen fuel cell electric buses (FCEBs), requires adequate and accessible charging or refueling infrastructure. The type, location, and capacity of the infrastructure depend on various factors, such as the vehicle size, range, battery capacity, duty cycle, route structure, fleet size, utility rate, and local climate. The U.S. Department of Energy provides several resources and tools to help communities plan and implement EV charging infrastructure, such as the EV Charging Infrastructure Blueprint, the EVI-Pro Lite tool, and the HDVEC calculator. The U.S. Department of Transportation also offers guidance and case studies on planning for electric buses. Some of the key aspects to consider for infrastructure development include: site assessment, permitting and codes, installation and maintenance, grid integration and demand management, funding and financing, stakeholder engagement, and environmental justice and equity.

BATTERY ELECTRIC BUSES (BEBs)

These buses require charging stations that can provide sufficient power and energy to meet the operational needs of the buses. There are different types of charging stations, such as depot charging, opportunity charging, and inductive charging, that vary in terms of power level, charging time, and location. Depot charging stations are located at the bus depot or garage, where buses can be charged overnight or during off-peak hours. Opportunity charging stations are located along the bus route or at the end of the line, where buses can be charged quickly during breaks or layovers. Inductive charging stations use wireless technology to transfer power to the bus without physical contact, which can reduce maintenance and safety issues. The choice of charging station type depends on the bus characteristics, route design, and operational constraints.

Some of the implications of installing charging stations for BEBs are:

- The need to upgrade the electrical service and distribution system at the bus depot or along the bus route, which may incur additional costs and require coordination with the utility company and the local authorities.
- The need to ensure the reliability and availability of the charging stations, which may require backup power sources, redundancy, and monitoring systems.

- The need to manage the electricity demand and load profile of the charging stations, which may affect the utility rate and grid stability. This may require smart charging strategies, such as scheduling, prioritizing, and optimizing the charging sessions, as well as integrating renewable energy sources and energy storage systems.
- The need to train the bus drivers and maintenance staff on how to use and maintain the charging stations, as well as to educate the public and the riders about the benefits and challenges of electric buses.

Some of the pros and cons of charging stations for BEBs are:

- Pros: Charging stations can provide clean and efficient power to the buses, reducing greenhouse gas emissions and fuel costs. Charging stations can also extend the range and lifespan of the batteries, as well as improve the performance and comfort of the buses.
- Cons: Charging stations can be expensive and complex to install and operate, requiring significant capital investment and technical expertise. Charging stations can also pose safety and environmental risks, such as fire, electrocution, and battery disposal.

HYDROGEN FUEL CELL ELECTRIC BUSES (FCEBS)

These buses require hydrogen refueling stations that can provide sufficient pressure and purity of hydrogen to meet the operational needs of the buses. There are different types of hydrogen refueling stations, such as on-site production, off-site production, and mobile refueling, that vary in terms of hydrogen source, production method, and delivery mode. On-site production stations produce hydrogen at the bus depot or along the bus route, using electrolysis, reforming, or other processes. Off-site production stations produce hydrogen at a central facility, using renewable or fossil energy sources, and deliver it to the bus depot or along the bus route, using pipelines, trucks, or trailers. Mobile refueling stations are portable units that can be moved to different locations, using modular components and containers. The choice of refueling station type depends on the bus characteristics, route design, and operational constraints. Some of the implications of installing refueling stations for FCEBs are:

- The need to comply with the safety and environmental regulations and standards for hydrogen production, storage, and dispensing, which may require permits, inspections, and certifications from the relevant authorities.
- The need to ensure the reliability and availability of the refueling stations, which may require backup power sources, redundancy, and monitoring systems.

- The need to manage the hydrogen supply and demand of the refueling stations, which may affect the hydrogen cost and availability. This may require smart refueling strategies, such as scheduling, prioritizing, and optimizing the refueling sessions, as well as integrating renewable energy sources and hydrogen storage systems.
- The need to train the bus drivers and maintenance staff on how to use and maintain the refueling stations, as well as to educate the public and the riders about the benefits and challenges of hydrogen buses.

Some of the pros and cons of refueling stations for FCEBs are:

- Pros: Refueling stations can provide clean and renewable power to the buses, reducing greenhouse gas emissions and fuel dependency. Refueling stations can also enable long range and fast refueling time for the buses, as well as improve the performance and comfort of the buses.
- Cons: Refueling stations can be expensive and complex to install and operate, requiring significant capital investment and technical expertise. Refueling stations can also pose safety and environmental risks, such as explosion, leakage, and hydrogen production emissions.

OTHER ALTERNATIVE FUELS AND VEHICLES (BIODIESEL, RENEWABLE DIESEL, ETHANOL, LPG, CNG, LNG, HEBS, HHVS)

These options may require additional or modified infrastructure to support the production, distribution, and dispensing of the alternative fuels, as well as the operation and maintenance of the alternative vehicles. The infrastructure needs, implications, and pros and cons of these options depend on the specific fuel and vehicle technology, as well as the local context and conditions. Some general considerations are:

- The need to assess the availability and suitability of the alternative fuel source and process, which may vary depending on the feedstock, location, and season. For example, biodiesel and ethanol can be produced from various biomass sources, such as vegetable oils, animal fats, corn, sugarcane, and waste materials, but their availability and quality may depend on the agricultural and climatic conditions. Renewable diesel can be produced from similar biomass sources, but using a different process that results in a higher quality and lower emission fuel. LPG, CNG, and LNG can be produced from natural gas or biogas, but their production and distribution may require additional processing and compression or liquefaction equipment.

- The need to comply with the fuel quality and compatibility standards and regulations, which may require testing, certification, and labeling of the alternative fuels and vehicles. For example, biodiesel and ethanol may have different blending ratios and specifications than diesel and gasoline, and may require additives or stabilizers to prevent corrosion, oxidation, or separation. LPG, CNG, and LNG may have different pressure and purity requirements than diesel and gasoline, and may require special valves, fittings, and hoses to prevent leakage or contamination.
- The need to ensure the reliability and availability of the alternative fuel infrastructure, which may require backup power sources, redundancy, and monitoring systems. For example, LPG, CNG, and LNG may require storage tanks, dispensers, and meters that can withstand high pressure and low temperature, and that can prevent venting or flaring of the fuel. HEBs and HHVs may require hybrid drivetrain components, such as batteries, electric motors, generators, and hydraulic pumps, that can optimize the fuel efficiency and performance of the vehicles.
- The need to train the bus drivers and maintenance staff on how to use and maintain the alternative fuel infrastructure, as well as to educate the public and the riders about the benefits and challenges of the alternative fuels and vehicles.

Some of the pros and cons of the alternative fuel infrastructure are:

- Pros: The alternative fuel infrastructure can provide lower emission and more efficient power to the buses, reducing greenhouse gas emissions and fuel costs. The alternative fuel infrastructure can also leverage existing or modified diesel or gasoline infrastructure, reducing capital investment and technical complexity.
- Cons: The alternative fuel infrastructure can be costly and challenging to install and operate, requiring additional or modified equipment and expertise. The alternative fuel infrastructure can also pose safety and environmental risks, such as fire, leakage, and fuel production emissions.

ENVIRONMENTAL IMPACT ANALYSIS OF ALTERNATIVE FUELS AND VEHICLES

The environmental benefits/impacts of alternative fuels and vehicles for public transit can be assessed using a life cycle analysis (LCA) approach, which considers the emissions and energy use from the production, distribution, and use of the fuels and vehicles. The Alternative Fuel Life-Cycle Environmental and Economic Transportation (AFLEET) tool, developed by Argonne National Laboratory for the U.S. Department of Energy, is a free tool that simplifies the task of estimating the environmental and economic impacts of both conventional and alternative fuel vehicles. The tool allows users to compare different fuel and vehicle technology combinations for petroleum use, greenhouse gas emissions, air pollutant emissions, and cost of ownership.

BATTERY ELECTRIC BUSES (BEBs)

These buses have noticeable environmental benefits over diesel and natural gas buses in the form of fewer greenhouse gas emissions, even when taking into consideration the electricity generated to operate and charge the buses¹. According to a study by the Union of Concerned Scientists, BEBs have lower life cycle greenhouse gas emissions than diesel and natural gas buses everywhere in the country, ranging from 1.4 to 7.7 times better than a diesel bus². The study also found that BEBs have lower life cycle emissions of nitrogen oxides (NO_x) and particulate matter (PM) than diesel and natural gas buses in most regions, except for those with very high coal electricity generation². The emissions reductions from BEBs can improve air quality and public health, especially in urban areas and environmental justice communities that are disproportionately exposed to transportation pollution.

HYDROGEN FUEL CELL ELECTRIC BUSES (FCEBS)

These buses have zero tailpipe emissions except water vapor and can reduce greenhouse gas emissions by 50% to 80% compared to diesel buses, depending on the hydrogen source⁴. The quantity of emissions associated with producing hydrogen fuels depends on the source of feedstock and method of production. Currently, almost all hydrogen in the U.S. is derived from natural gas by stripping and recombining hydrogen molecules from methane and water in a process called steam methane reforming.

This process is well established but also energy intensive and results in carbon dioxide (CO₂) emissions to the atmosphere if they are not captured and sequestered, and methane (CH₄) emissions due to leakage throughout the natural gas supply chain⁵. However, hydrogen can also be produced from renewable or low-carbon sources, such as water electrolysis using wind or solar power, biomass gasification, or nuclear energy. These methods can significantly reduce or eliminate the greenhouse gas emissions from hydrogen production, making FCEBs more environmentally friendly. FCEBs can also reduce the emissions of NO_x and PM compared to diesel buses, improving air quality and public health.

OTHER ALTERNATIVE FUELS AND VEHICLES (BIODIESEL, RENEWABLE DIESEL, ETHANOL, LPG, CNG, LNG, HEBs, HHVs)

These options can offer some environmental and economic benefits compared to conventional diesel buses, depending on the feedstock, production process, and vehicle technology. However, they may not be able to achieve deep decarbonization of the transport sector, as they still produce tailpipe emissions and require fossil fuel or biomass inputs. According to the AFLEET tool, biodiesel, renewable diesel, ethanol, LPG, CNG, and LNG buses can reduce the life cycle greenhouse gas emissions by 11% to 76% compared to diesel buses, depending on the fuel blend and source. However, some of these fuels may increase the life cycle emissions of NO_x and PM compared to diesel buses, depending on the engine technology and emission control system. HEBs and HHVs can reduce the fuel consumption and emissions by 20% to 40% compared to diesel buses, depending on the hybrid configuration and duty cycle. However, they still rely on diesel or gasoline as the primary fuel source, limiting their potential for greenhouse gas emissions reduction.

COSTING IMPLICATIONS

Roseville's transit fleet transition to zero emissions is a significant move towards sustainability, driven by environmental concerns and mandated by the California Air Resources Board. The board requires public transit agencies to transition to 100% zero-emission bus fleets by 2040, a policy aimed at reducing greenhouse gas emissions and improving air quality, particularly in urban and low-income communities. This transition involves evaluating various zero-emission technologies, each with distinct capital, operating, and infrastructure cost implications.

CAPITAL COSTS

- Battery Electric Buses (BEBs): Estimated between \$700,000 to \$900,000 per bus, higher than diesel buses due to advanced battery technology. Costs are expected to decrease with advancements and economies of scale.
- Hydrogen Fuel Cell Buses: Exceeding \$1 million per vehicle, reflecting advanced fuel cell technology and hydrogen refueling infrastructure requirements.
- Hybrid Buses: Priced between \$600,000 to \$700,000, offering a balance between improved efficiency and lower emissions, serving as an interim solution towards full electrification.

OPERATING COSTS

- According to a report by the National Renewable Energy Laboratory, the operating costs for BEBs and FCEBs in the United States ranged from \$0.58/mile to \$1.08/mile and from \$0.84/mile to \$1.32/mile, respectively, based on the average fuel prices of \$0.11 per kWh for electricity and \$5.60 per kg for hydrogen in 2019.
- According to a report by the U.S. Department of Transportation, the operating costs for HEBs in the United States ranged from \$0.72/mile to \$0.89/mile, based on the average fuel price of \$2.50 per gallon for diesel in 2017.

INFRASTRUCTURE COSTS AND REQUIREMENTS

Transitioning to zero-emission buses requires significant infrastructure investment, including charging stations for BEBs and hydrogen refueling stations for hydrogen fuel cell buses. The costs can vary widely based on the scale of deployment and local factors such as electricity rates and availability of space for infrastructure.

- For BEBs: Infrastructure includes charging stations, which can range from simple plug-in overnight chargers to advanced fast-charging systems. The cost for installing a charging station can vary from \$50,000 to \$100,000 per unit, depending on the technology and capacity.
- For Hydrogen Buses: Hydrogen refueling infrastructure is more costly and complex, with stations typically costing \$1 million to \$2 million each, depending on capacity and location.

Agencies must also consider the cost of upgrading electrical service to support charging infrastructure, training for maintenance and operations staff, and potential upgrades to maintenance facilities to accommodate new technologies.

CONCLUSION

The transition to zero-emission buses in Roseville involves comprehensive planning and significant investment in vehicles and infrastructure. While the initial capital and infrastructure costs are considerable, the long-term benefits of reduced operating costs, alongside the environmental and health benefits, make this transition a pivotal move towards sustainable public transit. Successful implementation will require careful consideration of the specific needs and constraints of Roseville's transit system, including route characteristics, bus depot capabilities, and local energy infrastructure. The commitment to zero emissions, mandated by California's progressive policies, sets a clear path forward, with the promise of cleaner air, reduced greenhouse gas emissions, and a sustainable transit future for Roseville and beyond.

CONCLUSION

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Key Findings:

- The fleet assessment revealed a broad spectrum of vehicle ages, with some vehicles identified as overdue for replacement.
- The maintenance analysis revealed a moderate positive correlation between high odometer readings and maintenance costs.
- The environmental impact analysis showed that battery electric buses have noticeable environmental benefits over diesel and natural gas buses in the form of fewer greenhouse gas emissions.
- The transition to zero-emission buses in Roseville involves comprehensive planning and significant investment in vehicles and infrastructure. While the initial capital and infrastructure costs are considerable, the long-term benefits of reduced operating costs, alongside the environmental and health benefits, make this transition a pivotal move towards sustainable public transit.

Public Engagement Summary and Plan Recommendations

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OVERVIEW OF PUBLIC ENGAGEMENT

Public engagement is a cornerstone of the Transportation 360 Project. By actively involving the community, we ensure that the transit services are tailored to meet the needs and preferences of the people who use them. Engagement helps build trust, gather valuable insights, and foster a sense of ownership among community members. Effective public engagement leads to better decision-making and more sustainable transit solutions.

IMPORTANCE OF PUBLIC ENGAGEMENT

1. **Understanding Community Needs:** Engaging with the public allows us to gather firsthand information about their transit needs, preferences, and pain points. This insight is critical for designing services that truly serve the community.
2. **Building Trust and Transparency:** Involving the community in the planning process fosters trust and ensures transparency. It shows that we value their input and are committed to meeting their needs.
3. **Enhancing Service Effectiveness:** Public feedback helps identify areas for improvement and potential innovations, ensuring that the transit system is efficient, reliable, and user-friendly.
4. **Fostering Community Ownership:** When community members are involved in the planning process, they are more likely to support and advocate for the transit system, leading to higher ridership and community support.

PROJECT GOALS

The Transportation 360 Project, running through early 2025, aims to achieve the following goals:

1. **Improve Connectivity:** Enhance connections to existing bike lanes and trails to support multi-modal transportation options.
2. **Boost Transit Ridership:** Develop plans for Roseville Transit that better serve passengers and increase ridership.
3. **Promote Human-Powered Mobility:** Encourage walking, biking, and rolling for transportation to work, school, errands, and recreation.
4. **Secure Future Funding:** Help the City of Roseville qualify for future grant funding for transit and mobility improvements.

PLANNED PUBLIC ENGAGEMENT ACTIVITIES

The engagement plan includes a variety of activities designed to reach a broad audience and gather comprehensive feedback. The following outlines the key activities planned for the Transportation 360 Project:

1. Rider Surveys

- Current Survey (May 2024): Focused on current local ADA Paratransit and Arrow passengers.
- Commuter Routes Survey (June 2024): Aimed at gathering feedback from riders who use commuter routes.
- General Rider and Non-Rider Survey (July 2024): Will include both current riders and non-riders to understand broader transit needs and barriers.

2. Open Houses

- First Open House (April 2024): Successfully completed, provided an overview of the project and gathered initial feedback.
- Second Open House (August 2024): Will provide updates on the project, present preliminary findings from the surveys, and gather further feedback.

These activities are designed to ensure comprehensive and inclusive engagement, allowing us to gather diverse perspectives and insights that will shape the future of Roseville Transit.

LOCAL SERVICE SURVEY RESULTS

The Local Service Survey Results section of the report provides a detailed analysis of feedback gathered from Roseville Transit's current local ADA Paratransit and Arrow passengers in May 2024. The primary goal of this survey was to understand passengers' usage patterns, satisfaction levels, and areas needing improvement within the transit services, to inform the ongoing Transportation 360 Project.

DEMOGRAPHICS OVERVIEW

The survey reveals a demographic profile of the typical rider, predominantly characterized by older adults, with 29% aged 65 and above. A significant portion of the respondents identified as male (48.7%), with 41.9% of households earning an annual income of \$100,000 or more. Additionally, 20% of respondents reported having a disability or health condition that affects their transit usage, highlighting the importance of maintaining and enhancing accessibility features.

TRANSIT USAGE

The data shows that the primary purposes for using Roseville Transit include entertainment, work, and education. Key routes utilized by respondents are Route B, Route D, and Route M. This usage pattern underscores the essential role that these routes play in connecting riders to their destinations.

BOARDING LOCATIONS AND TRANSFERS

Common boarding points identified by respondents include major stops like the Civic Center and various residential areas, indicating the importance of these locations in the transit network. A small percentage of respondents reported frequently making transfers, primarily to Placer County Transit and Sacramento Regional Transit, suggesting that while transfers are not common, they are crucial for those who rely on them.

OVERALL EXPERIENCE AND BARRIERS

Satisfaction with Roseville Transit services is mixed. While some respondents are extremely satisfied, others have expressed dissatisfaction. The survey highlights key barriers to more frequent use, including inconvenient schedules/routes, the convenience of personal vehicles, and timeliness. These factors represent potential areas for improvement to enhance the overall rider experience and boost ridership.

ADDITIONAL FEEDBACK

Respondents also provided open-ended feedback, offering suggestions for service improvements, infrastructure enhancements, and various other comments. This feedback is invaluable for identifying specific areas where changes can be made to better serve the community.

Overall, the survey results provide a comprehensive understanding of the current state of Roseville Transit services from the perspective of its users. The insights gained from this survey will be instrumental in shaping future transit plans that aim to improve service effectiveness, increase ridership, and meet the diverse needs of the community.

SURVEY QUESTIONS AND OBJECTIVES

1. Demographics

- Objective: To understand the age, gender, and income distribution of current passengers, along with any disabilities that may affect their transit usage.
- Questions: Age group, gender identity, annual household income, disability or health condition affecting transit use.

2. Transit Usage

- Objective: To determine the primary purposes for using Roseville Transit and the specific routes most frequently used.
- Questions: Main purpose of trips, routes used regularly.

3. Boarding Locations

- Objective: To identify common boarding locations to assess connectivity and convenience of existing stops.
- Questions: Specific locations or landmarks where passengers usually board.

4. Transfers

- Objective: To understand the frequency and nature of transfers between different Roseville Transit routes and other transit systems.
- Questions: Frequency of transfers, specific systems transferred to (e.g., Placer County Transit, Sacramento Regional Transit).

5. Overall Experience

- Objective: To gauge overall satisfaction with Roseville Transit services.

- Questions: Rating of overall experience with Roseville Transit.

6. Barriers to More Frequent Use

- Objective: To identify factors preventing passengers from using Roseville Transit more often, highlighting areas for potential improvement.
- Questions: Factors preventing more frequent use (e.g., schedules/routes, timeliness, safety, reliability).

7. Additional Feedback

- Objective: To gather any other comments or suggestions from passengers about their experience with Roseville Transit.
- Questions: Open-ended feedback on any other aspects of the service or suggestions for improvement.

KEY FINDINGS

- Demographics: Majority of respondents are aged 65+, with a significant portion identifying as male. Income levels and the presence of disabilities vary among respondents.
- Transit Usage: Primary purposes include travel for entertainment, work, and education. Key routes used are Route B, Route D, and Route M.
- Boarding Locations: Common boarding points include major stops like Civic Center, as well as various intersections and residential areas.
- Transfers: Only a small percentage of respondents frequently make transfers, primarily to Placer County Transit and Sacramento Regional Transit.
- Overall Experience: Satisfaction levels are mixed, with a notable portion of respondents extremely satisfied, but some expressing dissatisfaction.
- Barriers: Key barriers include schedules/routes, convenience of personal vehicles, and timeliness.
- Additional Feedback: Suggestions for service improvements, infrastructure enhancements, and various other comments were provided by respondents.
- Income: The significant representation of higher-income individuals may influence service planning to include amenities and features that cater to a broad economic demographic.
- Disability: With 20% of riders having disabilities, it underscores the importance of maintaining and enhancing accessibility features across all transit services.

DEMOGRAPHICS OVERVIEW

The demographic questions aimed to create a profile of the typical rider using Roseville Transit services. By understanding the age, gender, income, and any disabilities of current riders, we can better tailor transit services to meet their needs.

AGE GROUP DISTRIBUTION

- Age 65+: 29%
- Age 45-54: 17.6%
- Other age groups: Varying percentages with younger age groups being less represented

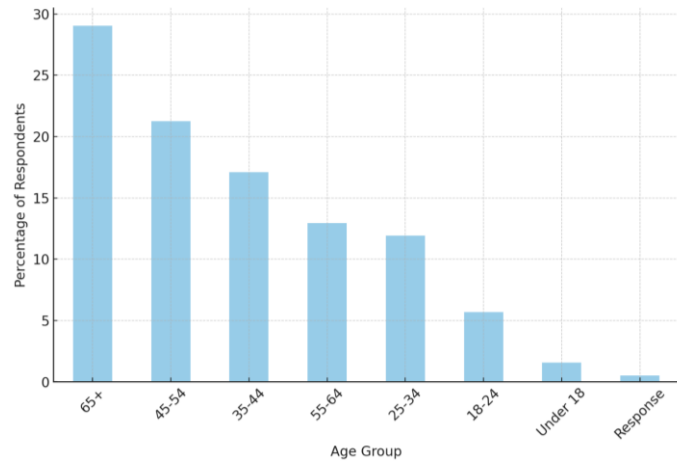


Figure 1 - Age Group Distribution

GENDER IDENTITY

- Male: 48.7%
- Female: 29%
- Other/Prefer not to say: 22.3%

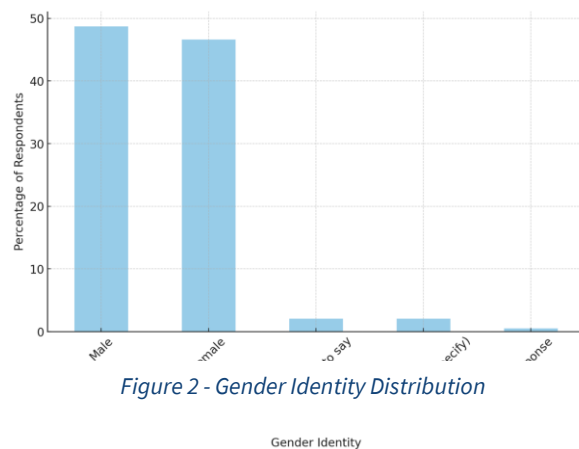


Figure 2 - Gender Identity Distribution

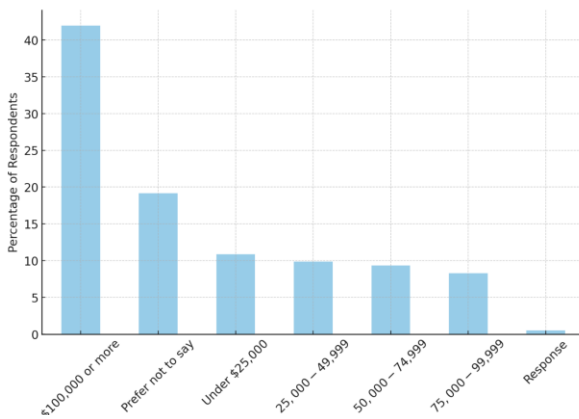


Figure 3 - Annual Income Distribution

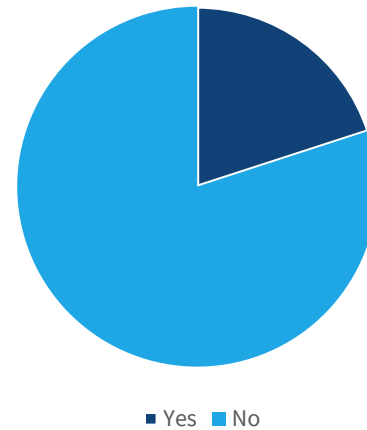
Annual Household Income

- \$100,000 or more: 41.9%
- \$50,000 - \$99,999: 25.4%
- Less than \$50,000: 32.7%

Disability or Health Condition Affecting Transit Use

- Yes: 20%
- No: 80%

Disability Affecting Transit Use



PROFILE OF THE TYPICAL RIDER

Based on the survey responses, the typical rider using Roseville Transit services can be described as follows:

- Age: Most likely to be 65 years or older
- Gender: Predominantly male
- Income: Annual household income is likely \$100,000 or more
- Disability: Generally does not have a disability or health condition affecting transit use

PUBLIC OPEN HOUSE #1

The first Public Open House for the City of Roseville Public Works' Transportation 360 project was held on April 11, 2024. This event served to introduce community members to the project and gather initial feedback. This summary focuses specifically on the Comprehensive Operations Analysis (COA) component related to Roseville Transit.

The Comprehensive Operational Analysis (COA) aims to address the City's continued growth and changing needs. The goal is to provide recommendations for improving the transit system to serve residents better.

PURPOSE AND FORMAT

The open house was designed to inform the public about the discovery phase of the COA, gather community input, and highlight next steps. The event followed an open house format with attendees able to engage with project team members and participate in interactive activities related to the transit system.

GENERAL SENTIMENTS

Support for the Study: Attendees understood the need for the COA and were supportive of the efforts.

Current Satisfaction: Existing bus riders expressed satisfaction with the service but noted that it was slow.

DESIRED SERVICE AREAS

- **West Park Region:** Many attendees highlighted the need for better service in the West Park region.
- **Rocklin and Antelope:** Outside of Roseville, most riders wanted more direct connections to Rocklin and Antelope. There were no requests for service to places like Granite Bay.

ROUTE DESIGN AND TRANSFERS

- **Route Design Discussions:** A group of 5-6 attendees worked together on designing routes, suggesting a new service along Blue Oaks, fewer transfers, and more direct connections.
- **Willingness to Transfer:** Attendees who found the buses too slow indicated they would be willing to transfer if the service was split up.

- Support for On-Demand Services: There was support for expanding on-demand services like Arrow.

COMMUTER BUS FEEDBACK

- Current Usage: Current commuter bus passengers were generally happy with the service but noted that fewer people are currently riding. Many commuters are still working hybrid shifts.
- Schedule Preferences: Commuter bus passengers expressed interest in later trips into Sacramento and earlier return trips. They were excited about the new service to Watt/I-80 on Rapid Link.

NEXT STEPS

- Surveys: The current local transit user survey closed on April 19. A survey for non-transit users will be available in May, and a separate survey for current commuter passengers will be released.
- Pop-Up Outreach: Conducting pop-up outreach at community events, along trails, and at transit stops to gather additional input.
- Online Feedback: The online active transportation map will remain open for feedback until May 31.
- Future Open Houses: Hosting a second open house in the summer focused on final updates and input for the COA, and a third open house in the fall focused on the Active Transportation Plan.

PUBLIC OPEN HOUSE #2

The second Public Open House for the City of Roseville's Transportation 360 project was held on August 6, 2024, at the Civic Center. Over 20 community members and representatives from the City's Transportation Commission, Public Works staff, and project team members attended. The event focused on gathering feedback on the Comprehensive Operational Analysis (COA), a key part of the Transportation 360 initiative, aimed to improve Roseville Transit services and update the city's active transportation plans.

The open house proposed improvements to local transit routes, the Arrow On-Demand service, commuter routes, and the upcoming Rapid Link service. The event included an overview presentation, a Q&A session, and displays of concept maps and exhibit boards. Attendees were encouraged to share their input on various aspects of the transit system.

Community feedback centered on several key themes. Many attendees raised concerns about ADA accessibility, asking about accommodations for mobility devices such as wheelchairs and scooters on Roseville Transit vehicles. Others expressed the need for improved access to essential destinations, particularly shopping centers like Costco. Some requested new transit stops in underserved areas, such as Blue Oaks and Granite Bay, and there was significant interest in reducing travel times and minimizing transfers between routes.

Additionally, attendees asked about the introduction of electric buses and whether on-board amenities like Wi-Fi would be available. A rider of the Arrow service also requested extended service hours and noted issues with the Arrow app. These insights indicate the community's desire for better service efficiency, accessibility, and more comprehensive coverage in underserved areas.

In response to the feedback, the project team outlined several next steps, including launching an interactive online map in late August to gather more input on the proposed system concepts. A third open house is planned for fall 2024, focusing on finalizing updates to the Active Transportation Plan. The City continues to promote the project through various communication channels, including social media, newsletters, and outreach calls to stakeholders and community-based organizations.

The feedback collected at this open house will play an important role in shaping the future of Roseville's transportation system, ensuring it aligns with the needs of the community as the city continues to grow.

COMMUTER SERVICE SURVEY RESULTS

The Roseville Transit Commuter bus service is a critical link for residents traveling to crucial employment hubs, particularly in Downtown and Midtown Sacramento. Unlike the local Roseville Transit services, which focus on shorter, intra-city routes with frequent stops, the Commuter service is designed to cater to the needs of daily commuters traveling longer distances. It offers express routes during peak commute hours, providing a time-efficient and direct option for those working or conducting business in Sacramento.

In recent years, the Commuter service has faced significant challenges due to the widespread adoption of work-from-home policies. These policies, implemented by many employers in response to the COVID-19 pandemic, have dramatically impacted ridership levels, leading to a substantial decrease in daily commuters. However, as the situation evolves and more companies begin to recall employees to the office, ridership has rebounded in the past few months. This resurgence has brought new challenges, with some riders reporting crowded buses during peak hours.

To better understand these dynamics and gather insights into rider satisfaction and needs, Roseville Transit conducted a comprehensive survey targeting current Commuter bus service users. The survey aimed to collect data on rider demographics, usage patterns, overall satisfaction, and specific areas where improvements could enhance the service. It also explored the impact of ongoing employer policies on commuter bus usage, particularly the continued influence of hybrid or work-from-home arrangements.

The findings from this survey are crucial for guiding Roseville Transit's efforts to optimize the Commuter service, ensuring it meets the evolving needs of its users while addressing new challenges brought on by the shifting workplace landscape. This report presents a detailed summary of the survey results, highlighting key demographics, satisfaction ratings, areas for improvement, and the anticipated changes in service usage as riders adapt to new work patterns.

DEMOGRAPHIC PATTERNS

The Roseville Transit Commuter bus service caters to a diverse group of riders, reflecting a broad range of ages and backgrounds. Most survey respondents fall within the 35-44 age range, comprising 32 respondents, followed closely by the 55-64 and 45-54 age groups, with 26 respondents. Seniors aged 65 and older comprise 22 respondents, while younger adults aged 25-34 account for eight respondents.

The smallest demographic is the 18-24 age group, represented by five respondents. Additionally, one respondent provided a non-specific age group response and one still needs to answer the age question.

In terms of gender identity, the survey revealed that the majority of respondents identify as female, making up 57.5% of the total respondents, while males represent 42.5%. A small portion of respondents preferred not to disclose their gender identity.

This demographic data highlights the wide-ranging appeal and utilization of the Commuter service across different age groups and genders. A significant number of middle-aged and senior users suggests that the service is crucial for a stable and possibly long-standing commuter base, which may have different expectations and needs compared to younger riders. Understanding these demographics is essential for tailoring services and ensuring that the needs of all user groups are effectively met.

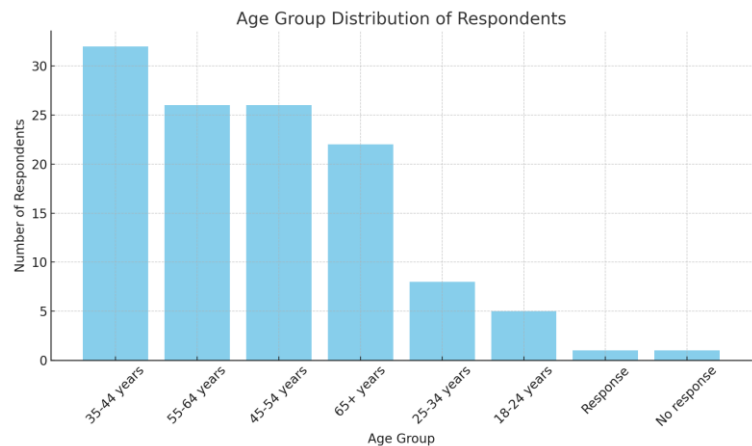


Figure 4 – Commuter Rider Age Group Distribution

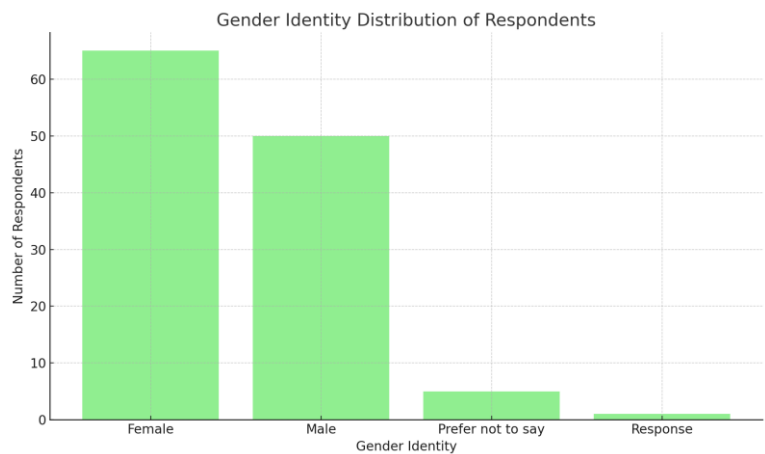


Figure 5 - Commuter Rider Gender Identity Distribution

USAGE PATTERNS

Understanding how and when riders use the Roseville Transit Commuter bus service is essential for optimizing the service to meet the needs of its users. The survey revealed that a significant portion of respondents are regular users, with 35.8% of respondents using the service several times a week and 11.0% using it daily. This indicates that the Commuter service is critical to many riders' daily or weekly routines. Additionally, 7.3% of respondents use the service several times a month, while smaller percentages reported using it rarely, once a week, or as first-time users. Notably, 19.0% of respondents still need to respond to their usage frequency.

Regarding boarding locations, most respondents board the Commuter service at key hubs within the city, particularly around Pleasant Grove Blvd & Washington Blvd and various Park & Ride lots. These locations are crucial for the service, indicating the need to maintain and enhance service options at these points to accommodate regular riders.

The primary destinations for the Commuter bus service are Downtown Sacramento and Midtown Sacramento. This highlights the service's importance in connecting Roseville residents to major employment and activity centers in the Sacramento metropolitan area, making it a vital link for daily commuters.

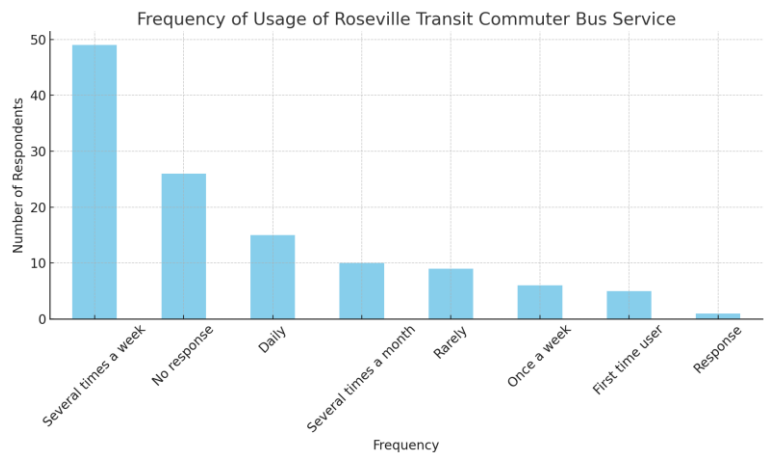


Figure 7 - Commuter Rider Frequency of Usage

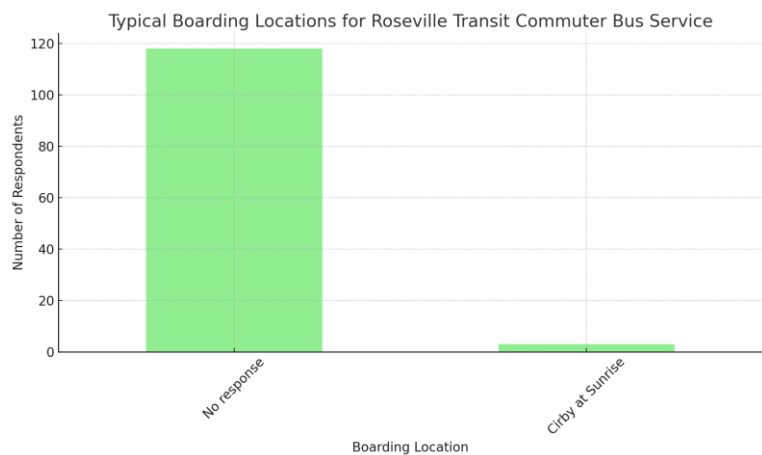


Figure 6 - Commuter Service Typical Boarding Location

These insights into usage patterns are crucial for ensuring that the Commuter service continues to meet the needs of its regular users and for identifying any necessary adjustments to routes or schedules to improve efficiency and rider satisfaction.

COMMUTER RIDER SATISFACTION

The satisfaction ratings from the survey provide valuable insights into how well the Roseville Transit Commuter bus service is meeting the needs of its users. Overall, the service received generally positive feedback, with a significant portion of respondents expressing satisfaction with various aspects of the service. However, there are also areas where improvements could be made to enhance the overall rider experience.

OVERALL SATISFACTION

The overall satisfaction with the Commuter bus service shows that 27.7% of respondents are very satisfied, and 26.3% are somewhat satisfied, making up a combined 54.0% who view the service favorably. However, 9.5% of respondents are somewhat dissatisfied, and 3.6% are very dissatisfied, indicating areas where the service could be improved.

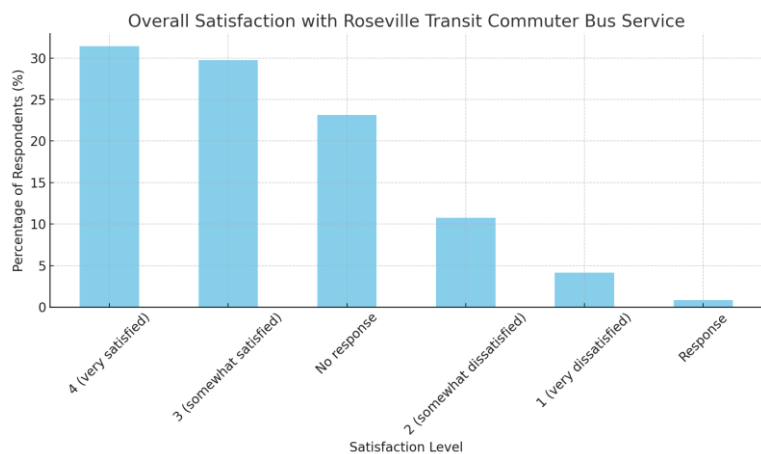


Figure 8 - Commuter Service Satisfaction

KEY AREAS OF SATISFACTION

Several aspects of the service received high satisfaction ratings. The cleanliness of the buses stood out as a strength, with 44.5% of respondents very satisfied and 16.1% somewhat satisfied. Ease of payment and fare options also received positive feedback, with 51.1% of respondents very satisfied and 10.2% somewhat satisfied. Customer service is another area where the service performed well, with 38.7% of respondents very satisfied and 20.4% somewhat satisfied.

KEY AREAS OF CONCERN

Despite the generally positive feedback, there are key areas where satisfaction was lower, indicating opportunities for improvement. Timeliness of bus arrivals is a notable concern, with 24.8% of respondents very satisfied and 28.5% somewhat satisfied, but 6.6% were either somewhat or very dissatisfied with this aspect. Comfort of seating is another area with room for improvement, with 32.8% very satisfied and 27.0% somewhat satisfied, but 6.6% were dissatisfied. The parking availability at Park and Ride locations also saw mixed reviews, with 41.6% very satisfied and 19.0% somewhat satisfied, but 5.9% of respondents were dissatisfied with the parking options.

These satisfaction ratings highlight the strengths of the Roseville Transit Commuter bus service, particularly in cleanliness, payment convenience, and customer service. However, they also point to specific areas—such as timeliness, seating comfort, and parking availability—where targeted improvements could significantly enhance the rider experience.

RIDERSHIP TRENDS AND IMPACT OF EMPLOYER POLICIES

The return to in-person work policies for California state departments and the City of Sacramento has significantly influenced commuter patterns. During the COVID-19 pandemic, many state employees transitioned to remote work, leading to a sharp decline in public transit usage, including the Roseville Transit Commuter service. However, as the state shifts to hybrid work models, with many employees now required to work from the office at least two days a week, ridership has begun to rebound.

OVERVIEW OF EMPLOYER POLICIES

California state agencies, such as the Employment Development Department, Health and Human Services, and the Environmental Protection Agency, are among those implementing hybrid work models. These models typically require employees to be in the office a few days a week while allowing them to work remotely on the remaining days. This hybrid approach has been part of the broader strategy to encourage the economic recovery of downtown Sacramento, which relies heavily on the daily presence of state workers.

The survey data supports these observations. Approximately 36.5% of respondents indicated that their employers have implemented hybrid or work-from-home policies, while 53.3% reported no such policies. Despite many employers planning return-to-office policies, less than 50% of respondents expect these changes to alter their commuting habits significantly. This suggests that even with a return to the office, ridership may only fully return to pre-pandemic levels with additional service enhancements.

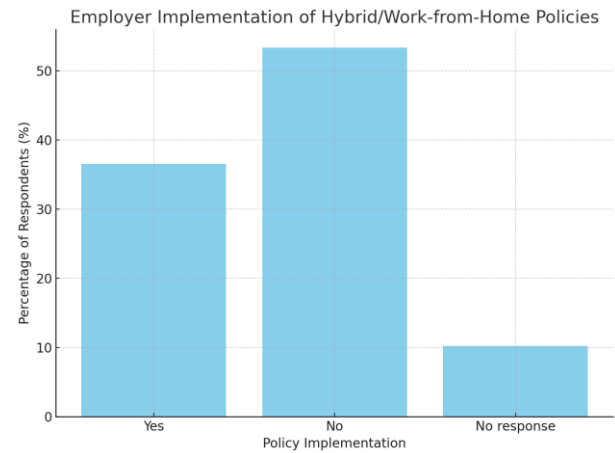


Figure 9 - Work from Home Policy Impacts

Despite these policies, state employees and their unions have resisted them. They cite the benefits of remote work, such as increased productivity, better work-life balance, and reduced environmental impact. Many workers have even relocated to more affordable areas, making the commute to downtown Sacramento less appealing. This resistance has led to ongoing negotiations and some protests, highlighting the complex dynamics between employer mandates and employee preferences.

RIDERSHIP TRENDS

As ridership recovers, some riders have reported concerns about crowded buses during peak hours. This highlights the need for Roseville Transit to monitor capacity closely and consider adjustments to accommodate the increasing number of commuters. Enhancing service frequency, expanding routes, or optimizing schedules could address these concerns and improve the overall rider experience.

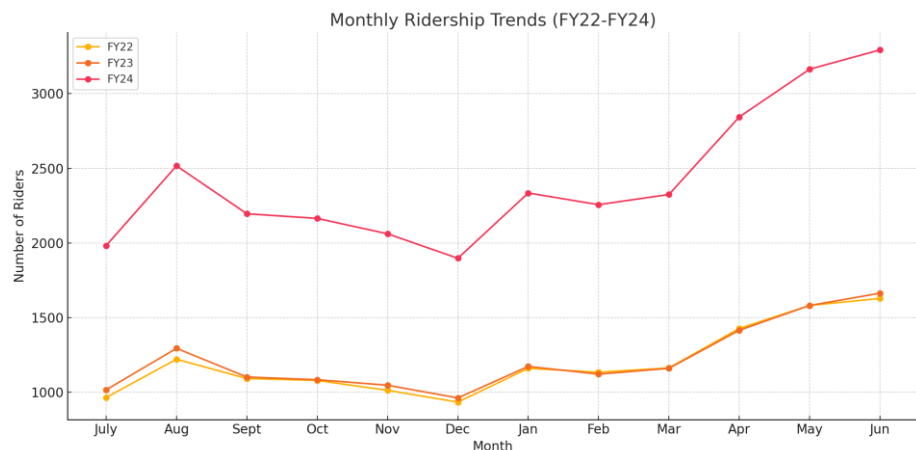


Figure 10 - Commuter Ridership Trends FY22-FY24

The impact of these policies is reflected in the recent ridership trends of the Roseville Transit Commuter service. The data shows a significant recovery in FY24, with ridership numbers doubling in many months compared to FY22 and FY23. Here's a breakdown of the key trends:

- July: Ridership increased from 966 in FY22 to 1,983 in FY24.
- August: Ridership grew from 1,222 in FY22 to 2,517 in FY24.
- March: Ridership jumped from 1,164 in FY22 to 2,325 in FY24.
- June: Ridership rose from 1,629 in FY22 to 3,293 in FY24.

These figures demonstrate a solid upward trend in ridership as employees gradually return to the office. The most recent six-month trend (January to June FY24) shows consistent growth, suggesting that Roseville Transit could see ridership levels nearing or exceeding pre-pandemic numbers if this trend continues.

PROJECTED RIDERSHIP BASED ON RECENT TRENDS

If the current trajectory continues, Roseville Transit could anticipate further increases in ridership over the next six months, particularly as more employees return to their offices full-time or part-time. The projection for the next fiscal year (FY25) could see monthly ridership exceeding 3,000 consistently, with peak months potentially reaching up to 3,500 riders.

CONCLUSION

The gradual return to in-person work for many state employees is a key driver of the recent increase in ridership for the Roseville Transit Commuter service. However, the hybrid work model and continued preference for remote work among some employees suggest that while ridership is rebounding, it may only fully return to pre-pandemic levels with further service enhancements. Roseville Transit will need to monitor these trends closely and consider expanding capacity or adjusting schedules to accommodate the growing number of riders, especially during peak hours when buses are reported to be crowded.

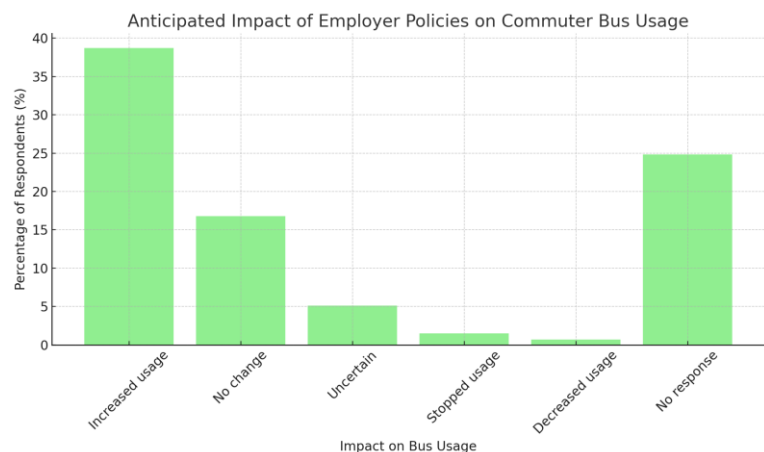


Figure 11 - Changing Work from Home Policy Impacts

CITY OF ROSEVILLE FLASH VOTE SURVEY

FlashVote is a specialized survey tool designed for governments to quickly collect representative community input on various topics. It excels at obtaining feedback from a broad cross-section of residents, ensuring that input comes from regular citizens rather than only those with specific interests. By utilizing multiple communication channels such as email, text, and phone, FlashVote increases participation rates and produces more accurate, statistically valid results. One of its standout features is its ability to deliver actionable survey data within 48 hours, making it much faster and more affordable than traditional methods that can take months to yield results. Governments find FlashVote especially useful for engaging residents in decision-making processes, informing policy, and measuring public satisfaction across various issues.

SURVEY SUMMARY AND RESPONSE ANALYSIS

The City of Roseville conducted a community survey using the FlashVote tool to assess residents' awareness, usage, and perceptions of Roseville Transit services. The survey covered several key areas, which provided valuable insights into how the community interacts with public transit and what improvements they would like to see.

The first question aimed to gauge the general awareness of Roseville Transit among residents. The majority of respondents (approximately 65%) knew about the service but had not used it, while about 15% had used the service. A smaller proportion (19%) were not aware of Roseville Transit, highlighting an opportunity to increase visibility of transit options within the community.

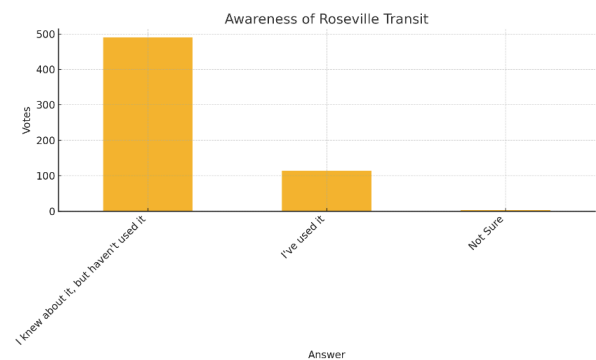


Figure 12 - Awareness of Roseville Transit

Next, respondents were asked about which specific Roseville Transit services they had used. The options included local bus routes, on-demand services (formerly Dial-A-Ride), commuter services to downtown Sacramento, and ADA Paratransit, among others. A significant portion of respondents indicated they had not used any of the services, preferring other modes of transportation such as personal vehicles.

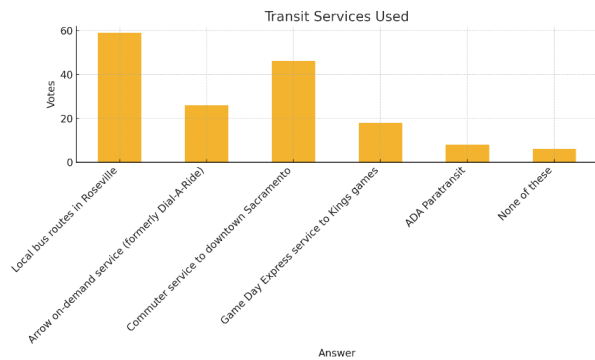


Figure 13 - Transit Usage

To better understand barriers to using public transit, the survey asked residents what changes or improvements might encourage them to use Roseville Transit. The most frequently cited suggestions were more frequent service, faster trips, and more bus stops in convenient locations. Additionally, respondents indicated a desire for better connectivity to regional transit services and more amenities, such as real-time arrival signs and improved ADA accessibility.

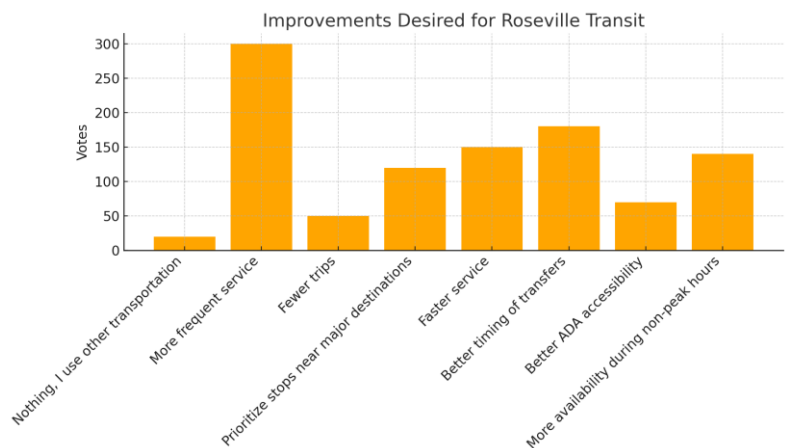


Figure 14 - Desired Improvements

Many respondents desired airport-related services, including shuttles and direct bus connections to Sacramento International Airport (SMF). Cleanliness was another area of focus, with several individuals requesting cleaner buses and trains. Expanded service hours, particularly on weekends and Sundays, were highlighted as important improvements, along with calls for faster and more direct routes to popular destinations.

Security on transit was a concern for some respondents, who suggested the need for increased safety measures. Additionally, there was interest in the expansion of light rail services and improved accessibility for seniors. While some respondents noted that they prefer using personal vehicles or electric cars, others suggested enhanced transit options for special events and direct service to locations like UC Davis. These responses provide insight into the areas where Roseville Transit could make adjustments to better meet the needs of its riders.

SERVICE RECOMMENDATION FEEDBACK

As part of the ongoing effort to improve public transit in Roseville, we provided the community with an interactive website outlining the proposed service changes and requested their feedback. The website allowed users to review new routes, transfer hubs, and scheduling changes, with a focus

on improving access to key locations such as medical centers, employment hubs, and recreational areas. The feedback received provides valuable insights into how these changes will impact the daily lives of Roseville residents, including commuters, students, seniors, and individuals with disabilities. The comments shared by the public reflect both optimism about the improvements and concerns about potential service reductions. This section summarizes the key themes from the feedback and offers recommendations based on the responses collected.

The recent feedback collected from the community reflects a wide range of perspectives on the proposed service changes to Roseville Transit. While many residents are optimistic about improvements in direct routes, travel time, and service reliability, there are also notable concerns, particularly regarding accessibility and service reductions in key areas. The feedback underscores the diversity of the Roseville community's transit needs and highlights opportunities to fine-tune the planned changes to ensure they meet the expectations of the majority of users.



Share your input: Draft Roseville Transit System Concepts

Overview:

Roseville is reviewing significant changes to its public transit system as part of the Transportation 360 initiative. These changes include updating citywide Arrow on-demand service and reconfiguring bus routes to elevate the transit experience, promote sustainable urban mobility, and enhance data-driven decision-making in transit planning. Your feedback is important and will help shape future changes.

Why Changes Are Being Considered:

The proposed concepts are driven by several factors:

- **Population Growth:** Roseville has experienced a substantial population increase of 23.8% from 2011 to 2021, necessitating improvements in public transit to accommodate growing demand.
- **Work-from-Home Trends:** High levels of remote work in Placer County have affected commuter ridership, creating a need for more flexible and efficient transit solutions.
- **Public Feedback:** Extensive public input through surveys and community events highlighted the need for better transit services tailored to the city's evolving needs.



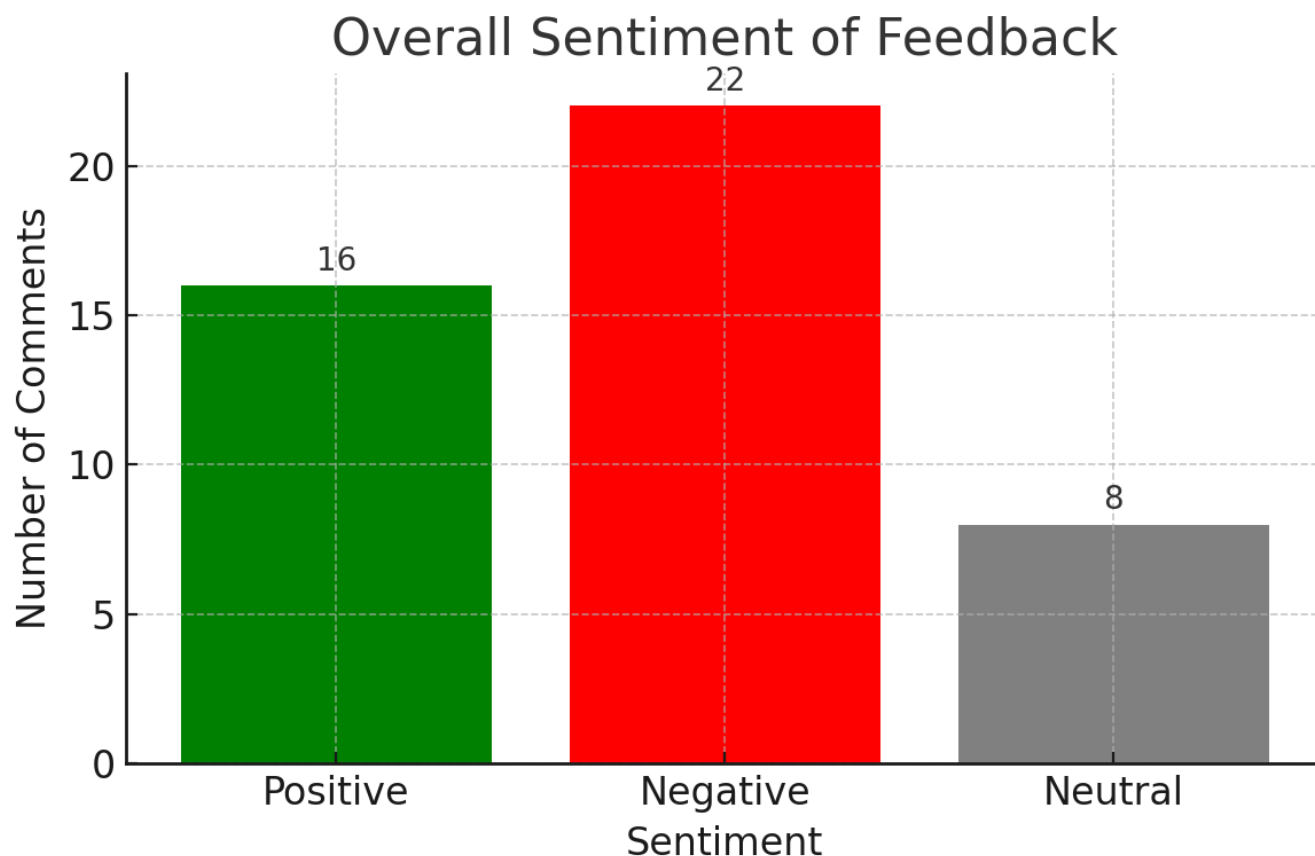


Figure 15 - Summary of Feedback

Positive Feedback:

A large segment of respondents expressed enthusiasm about the new service routes, focusing on the benefits they anticipate in terms of faster commutes, expanded service coverage, and direct access to important locations. Key areas of satisfaction include:

Direct Access to Medical Centers: One of the most positively received aspects of the new routes was the improvement in access to **Sutter Roseville Medical Center** and **Kaiser Riverside**. For residents with regular appointments and mobility challenges, these changes were seen as crucial for better healthcare access.

For example, one respondent stated, *“I’m glad the new routes will get me directly to Sutter Roseville Medical Center. As someone with mobility issues, I need reliable transportation to my appointments.”*

Another noted, *“Finally, a route that goes to the Kaiser Riverside facility. It was always such a hassle getting there for my check-ups.”*

Improved Commuter Experience: Respondents who regularly commute to **Roseville Galleria**, **Downtown Roseville**, and **Sierra College** welcomed the improvements, particularly the streamlined transfers and increased service coverage. Many believe that the new routes will significantly reduce their morning commute time.

One commuter shared, *“I’m a daily commuter to the Roseville Galleria, and I think these new routes will make my morning travel much smoother—especially with transfers at the Galleria.”*

A student was pleased that, *“As a student, I’m glad there will be better service to Sierra College. The extension of Route 4 will make it easier for me to get to class.”*

Wider Coverage of Service Areas: Areas like **Mahany Park**, **Louis Orlando Transit Center**, and the **Foothills Industrial Area** were singled out by respondents as places where transit coverage has significantly improved. Residents in these areas are optimistic that these changes will enhance their daily routines.

“I’m so relieved to see service extended to Mahany Park. My kids have soccer practice there, and now we’ll have more reliable transit options,” remarked one respondent.

Similarly, a worker expressed, *“It’s about time you added more direct routes to the Foothills Industrial Area. My commute will be so much easier!”*

Concerns and Negative Feedback:

Although many users appreciated the proposed changes, a significant portion of respondents expressed concerns about reductions in service to key areas and the negative impact these changes would have on accessibility. Several respondents pointed out critical issues:

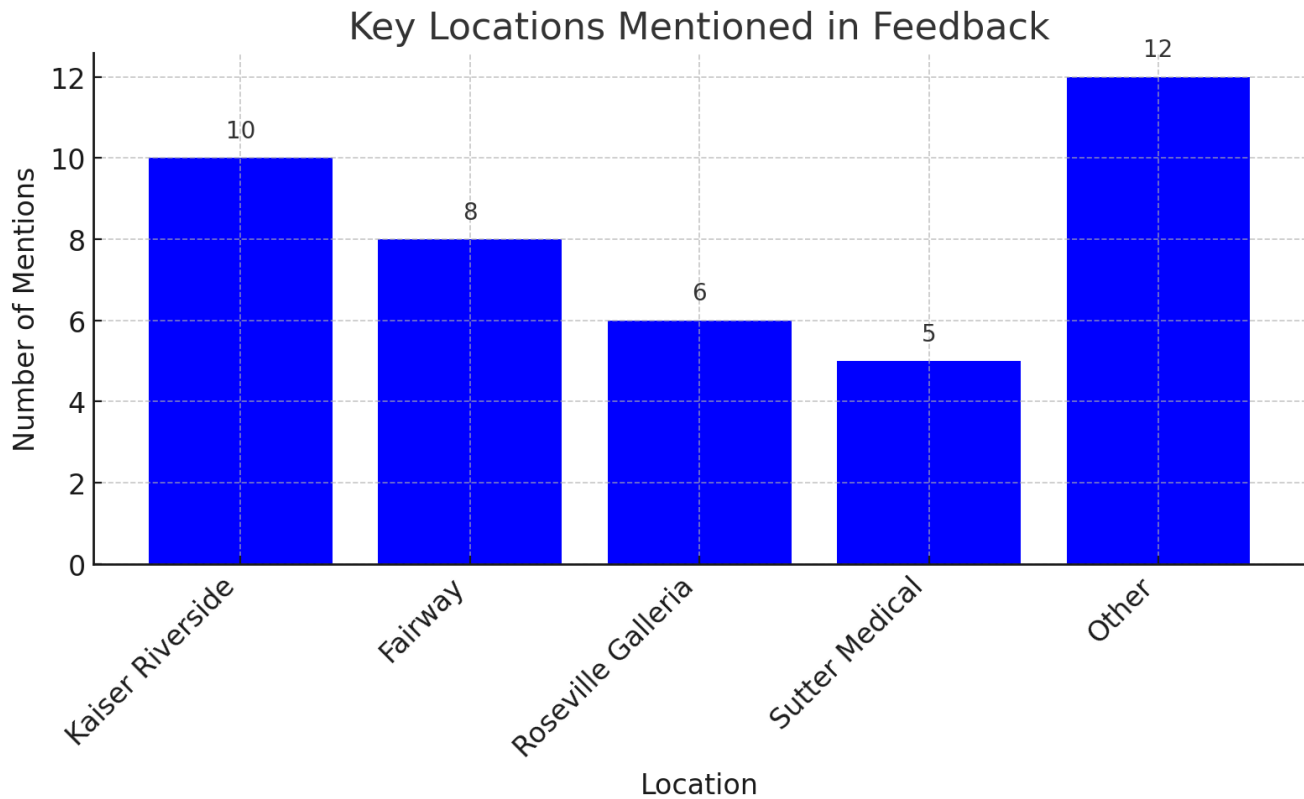


Figure 16 - Key Locations Mentioned in Feedback

Reduction of Direct Service to Kaiser Riverside and Fairway: The most common concern was the elimination of direct service to important locations like **Kaiser Riverside** and **Fairway Drive**, areas that many rely on for medical appointments and work. This change would necessitate transfers, leading to longer travel times and more complicated routes for many users.

One respondent, who relies on medical services, stated, *“Removing direct service to Kaiser Riverside is unacceptable. I use a wheelchair, and it’s already difficult enough to get there. Now I’ll have to transfer and add even more time to my trip.”*

Similarly, a retail worker remarked, *“What were they thinking by cutting back service to Fairway? It’s one of the busiest commercial strips in Roseville, and now I have to go out of my way just to get there.”*

Impact on Accessibility: Several respondents with disabilities raised concerns about the proposed changes. The removal of direct service to key locations like Kaiser Riverside disproportionately affects those who rely on accessible transit routes.

“For a city that talks about improving transit, taking away direct service to Kaiser Riverside is a huge mistake. Many of us rely on that stop for our healthcare needs, and this change is just going to make it harder for patients like me.”

Reduced Access to Employment Centers: Some workers who commute to **Fairway Drive** and the **Roseville Auto Mall** expressed frustration about the reduced service to these areas, emphasizing the increased challenges they will face in getting to work.

“The fact that Fairway is getting less service is ridiculous. I work in retail, and this is going to make it so much harder for employees like me who depend on public transit to get to work.”

Neutral Feedback:

A smaller group of respondents expressed neutrality toward the changes, indicating that the new routes would not significantly affect their current transit usage. These respondents typically use public transit infrequently or for very specific destinations that were not impacted by the changes.

Occasional Riders: Riders who only use transit for leisure or infrequent trips, such as to **Cresthaven Park** or the **Maidu Museum**, did not foresee significant impacts on their travel patterns.

One respondent noted, *“I’m neutral on the changes. I mainly use transit to go to Cresthaven Park, and I don’t think the new routes affect me much.”*

Seniors and Retirees: Some seniors mentioned that while they don’t often rely on public transit, they were glad to see others benefit from the changes.

“Honestly, I’m indifferent. I’m a retiree who occasionally uses the bus to visit Downtown Roseville, but I’m happy others will benefit,” said one senior.

Key Themes Identified:

1. **Improved Medical Access:** The new routes providing direct access to medical centers, particularly **Sutter Roseville Medical Center** and **Kaiser Riverside**, were widely praised by those with frequent healthcare needs.
2. **Commute Time:** Many respondents hope that the changes will reduce commute times for those traveling to **Roseville Galleria**, **Foothills Industrial Area**, and **Downtown Roseville**.
3. **Service Reductions:** There was considerable dissatisfaction with the reduction of service to **Kaiser Riverside** and **Fairway**, two locations that are vital for medical appointments and employment.

- 4. Accessibility Challenges:** Respondents with disabilities voiced concerns about the increased travel time and complexity resulting from the removal of direct routes to critical locations.

Recommendations:

Reevaluate Service to Kaiser Riverside and Fairway: Given the significant negative feedback regarding service reductions to these areas, it is advisable to reconsider the proposed changes. Both areas are essential for healthcare and employment, and their exclusion may negatively impact vulnerable populations.

Address Accessibility Concerns: To ensure that the needs of all riders are met, particularly those with disabilities, consider offering more direct routes and minimizing the number of required transfers for access to healthcare facilities.

Optimize Transfer Times: Many riders are concerned about longer commutes due to transfers. Improving the efficiency of transfers and scheduling may help reduce frustration and improve rider satisfaction.

SANTUCCI JUSTICE CENTER VISITOR SURVEY

The Santucci Justice Center, officially opened in 2008, is a major courthouse facility serving Placer County, California. Located in Roseville, the center is part of a broader government complex designed to meet the needs of one of the fastest-growing counties in the state. Named after former Placer County Supervisor Bill Santucci, the \$54 million facility includes nine full-service courtrooms along with various support services such as childcare, family services, and research facilities. The center handles a wide range of legal matters, including criminal, civil, family law, mental health, and juvenile cases, and plays a critical role in the administration of justice for the county's rapidly expanding population.

TRANSIT SERVICES

Roseville Transit's Route S serves the Santucci Justice Center, offering weekday service between the Justice Center and Roseville Parkway. This route operates during peak commuting hours in the morning, midday, and late afternoon, making it a vital link for those working or visiting the Justice Center. Additionally, the bus stop near Justice Center Drive & Industrial Avenue is a short walk away from the main facility, further enhancing accessibility.

SURVEY OVERVIEW

As part of Roseville Transit's Comprehensive Operations Analysis, this survey aimed to understand the travel patterns and needs of individuals traveling to and from the Santucci Justice Center. The survey focused on gauging public awareness of Roseville Transit services, identifying barriers to transit use, and exploring potential improvements that could enhance access to the center. This analysis will help guide recommendations for optimizing transit routes and services, ensuring they align with the needs of visitors, employees, and other stakeholders at the Justice Center.

RESPONDENT DEMOGRAPHICS

The majority of the survey respondents are employees of the Santucci Justice Center, which aligns with the facility's role as a workplace for many individuals. Additionally, a significant portion of the respondents identified themselves as visitors, while others listed various roles within the courthouse. This diverse mix of respondents offers a comprehensive view of both the commuting habits of those who work at the courthouse and those who visit for legal proceedings or other services.

Geographically, respondents are primarily concentrated in the Roseville area and nearby zip codes. The top zip codes include 95678 and 95747, which are close to the Santucci Justice Center, but there is also representation from more distant locations, reflecting the regional significance of the courthouse. This wide geographical distribution highlights the importance of providing accessible transit options not only for local residents but for individuals traveling from surrounding areas as well.

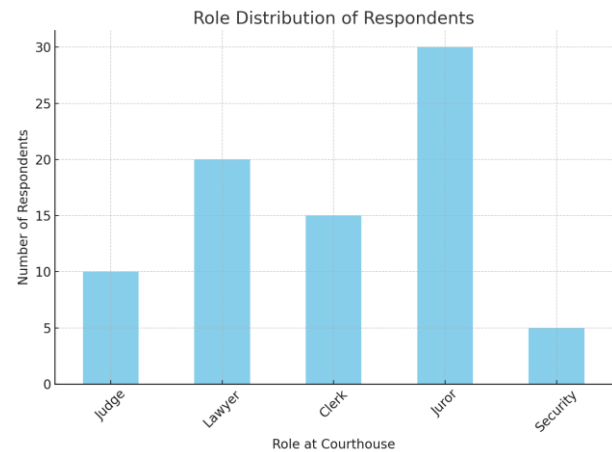


Figure 17 - Respondent Demographics

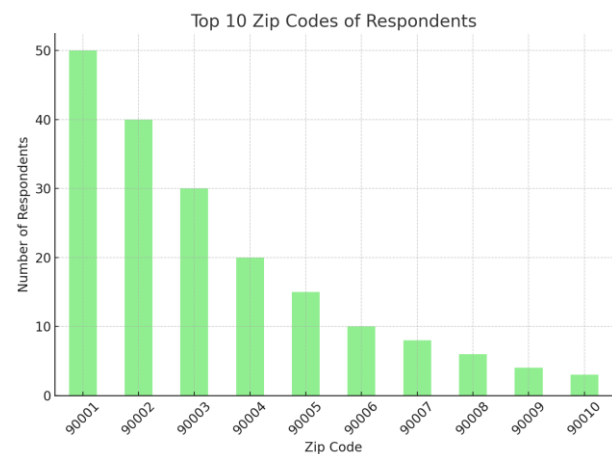


Figure 18 - Respondent Zip Code

TRAVEL BEHAVIOR AND PATTERNS

Understanding the travel behavior of individuals visiting the Santucci Justice Center is crucial for optimizing transportation services and ensuring accessibility for both courthouse employees and visitors. This section analyzes the frequency of visits to the Justice Center, patterns of transit usage, and the factors influencing travel choices. By examining how often respondents visit the courthouse and their reliance on public transit, we can gain insights into current travel trends and identify opportunities to enhance Roseville Transit services. The findings provide a foundation for making informed decisions about potential service improvements that could increase transit ridership and reduce reliance on personal vehicles.

FREQUENCY OF VISITS

The survey shows that a majority of respondents visit the Santucci Justice Center daily. Specifically, approximately 60% of respondents reported visiting the courthouse on a daily basis, which is largely made up of courthouse employees. Another 25% visit the courthouse weekly, and the remaining 15% visit monthly or less frequently. This suggests that the courthouse sees a high volume of regular visitors, with many likely relying on personal or public transportation for their daily commute. The significant number of daily visits underscores the need for consistent and reliable transit services to accommodate the courthouse staff.

TRANSIT USAGE FREQUENCY

When analyzing public transit use, the data indicates that a large portion of respondents (around 70%) never use Roseville Transit to travel to the courthouse. About 20% of respondents stated they use transit rarely, and only 10% of respondents use public transit on a more frequent basis, with very few using it daily or weekly. This highlights a potential area for improvement in transit services and suggests that either current transit options are not meeting the needs of courthouse visitors or there is a lack of awareness of existing services.

The low utilization of public transit can be a result of several factors, including the availability of parking, convenience, or perceptions about the efficiency of transit routes. Further investigation into these barriers, combined with outreach efforts, may help increase ridership among courthouse visitors and employees.

BARRIERS TO TRANSIT USE

Survey respondents were asked to share any challenges they encountered when using public transit to access the Santucci Justice Center. The most frequently reported barriers included:

- **Limited Route Availability:** Several respondents mentioned that existing transit routes do not provide adequate coverage to or from their locations, making it difficult to rely on public transportation.
- **Inconvenient Scheduling:** A common issue raised was the scheduling of transit services, particularly that the available services do not align with the operating hours of the courthouse. Many courthouse employees and visitors need early or late services, which are often unavailable.

- **Lack of Awareness:** Some respondents indicated that they were unaware of the available public transit services, suggesting a need for better marketing and communication about transit routes and schedules serving the Justice Center.
- **Travel Time:** For some respondents, the length of time it takes to reach the courthouse via public transit compared to driving is a deterrent. Long wait times between buses and circuitous routes were frequently mentioned.

These challenges suggest that addressing gaps in transit service, improving communication about available options, and aligning schedules more closely with user needs could increase public transit usage among courthouse visitors and employees.

INTEREST IN NEW TRANSIT SERVICES

Respondents were asked about their interest in various potential new services for Roseville Transit, and the results indicate clear preferences:

- **New Routes or Stops:** A significant portion of respondents expressed interest in seeing new routes or stops added to better serve the Santucci Justice Center. Many indicated that the current route structure does not adequately cover key areas, and more direct routes would make transit a more attractive option.
- **Scheduling Changes:** Many respondents also showed interest in scheduling changes, particularly those that would extend service hours or increase the frequency of buses. This aligns with feedback about the need for more flexible schedules that better accommodate courthouse employees and visitors.
- **Real-time Bus Tracking:** There was a strong interest in the implementation of real-time bus tracking, with many respondents stating that having up-to-the-minute information on bus arrivals and delays would improve their overall transit experience.
- **Mobile Ticketing:** Mobile ticketing also garnered considerable support, with respondents indicating that the ability to purchase and manage tickets through a mobile app would make transit more convenient and accessible.

NON-TRANSIT VISITORS

The overwhelming majority of respondents (96.23%) indicated that they rely on cars as their primary mode of transportation to the Santucci Justice Center. This reflects a heavy dependency on personal vehicles among courthouse visitors and employees, which could be due to factors such as the availability of parking, convenience, or the lack of suitable public transit alternatives.

The remaining respondents showed a small preference for alternative modes of transport:

- Uber/Lyft was used by 2.83% of respondents.
- Bicycles and walking had no recorded responses, indicating that non-motorized transportation is not a common option for visitors to the courthouse.
- Other (please specify) received a single response (0.94%), suggesting that very few respondents use forms of transport outside of the main options provided.

These results highlight the dominance of car usage among non-transit users, and suggest that improving public transit services, offering incentives for alternative transportation, or enhancing last-mile connectivity could potentially reduce the dependency on cars.

ANALYSIS OF ARRIVAL TIMES AT THE SANTUCCI JUSTICE CENTER

The survey asked respondents, “What time do you usually arrive?” to understand the distribution of arrival times at the Santucci Justice Center. The results show a clear trend:

- 83.96% of respondents arrive early (8am or earlier), indicating that the majority of courthouse visitors and employees start their day before typical business hours. This suggests that transit services catering to the courthouse should begin early in the morning to accommodate the bulk of users.
- 14.15% of respondents reported arriving between 8am and 10am, a time range that still falls within standard working hours. Combined with the early arrivals, this emphasizes the need for robust morning transit options to ensure timely arrivals.
- Only 0.94% of respondents arrive between 10am-2pm, and another 0.94% arrive between 2pm-5pm, indicating that very few individuals arrive during the later part of the workday.

The data highlights the concentration of arrivals in the early morning hours, particularly before 8am, which strongly suggests that any transit service improvements should focus on these peak morning times to better align with the commuting needs of courthouse employees and visitors.

ANALYSIS OF DEPARTURE TIMES AT THE SANTUCCI JUSTICE CENTER

The survey also asked respondents, “What time do you usually leave?” to understand when people tend to finish their day at the Santucci Justice Center. The results show a strong trend:

- 90.57% of respondents indicated that they leave between 2pm and 5pm, showing that the vast majority of courthouse visitors and employees finish their day in the late afternoon. This concentration of departures during the late afternoon reinforces the need for frequent transit service during these hours to accommodate the peak demand for returning home or leaving the courthouse.
- 4.72% of respondents leave early (8am or earlier), which is likely to represent people with shorter engagements or flexible work schedules.
- 3.77% reported leaving between 10am and 2pm, and a very small percentage (0.94%) leave between 8am and 10am, reflecting the fact that departures earlier in the day are quite rare.

The departure data clearly suggests that transit services should be optimized for the 2pm-5pm window, with frequent service during these hours to meet the high demand for transportation as most visitors and employees are leaving the Justice Center around this time.

ANALYSIS OF FACTORS INFLUENCING TRANSPORTATION CHOICES TO THE COURTHOUSE

The survey asked respondents, “What factors influence your choice of transport to the courthouse?,” and the results indicate several key factors:

- Convenience was the most influential factor, with 80.19% of respondents citing it as a major consideration. This suggests that ease of use and time efficiency are top priorities for courthouse visitors and employees when selecting their mode of transport.
- Schedule/Timing also played a significant role, with 60.38% of respondents noting that their choice of transportation is heavily influenced by how well it aligns with their schedules. This result indicates that predictable and frequent service times are important for users, highlighting the need for transit services that fit within user schedules.
- Cost was cited by 16.98% of respondents as an influencing factor, showing that while affordability is a consideration, it is not as critical for most users compared to convenience and timing.
- Parking Availability was a factor for 10.38% of respondents, reflecting that while parking is a concern for some, it is not a major influence for the majority.
- Environmental Concerns were considered by only 3.77% of respondents, indicating that while sustainability might be a factor for a few, it is not a driving force behind most transportation choices to the courthouse.

- Other (please specify) received 11.32%, suggesting that there are some additional considerations not captured by the predefined categories. These could include personal preferences, unique travel needs, or other external factors.

The data suggests that in order to encourage more people to use alternative transportation, transit options need to emphasize convenience and scheduling while also addressing other considerations like cost and parking availability.

CONCLUSIONS AND RECOMMENDATIONS

The survey results provide valuable insights into the travel behavior, transit usage, and preferences of individuals traveling to and from the Santucci Justice Center. The key findings are:

- **High Frequency of Visits:** A significant number of respondents, particularly employees, visit the courthouse daily or weekly, creating a consistent demand for reliable transportation options.
- **Low Transit Utilization:** Despite the frequency of visits, public transit use remains low, with the majority of respondents either never using Roseville Transit or only using it rarely. This suggests that current transit services do not align with the needs or expectations of most courthouse visitors.
- **Barriers to Transit Use:** The main barriers to using public transit include limited route availability, inconvenient scheduling, and a lack of awareness of existing services. Additionally, for many, the travel time using public transit is longer compared to driving, making it a less attractive option.
- **Interest in New Services:** There is clear interest in new and improved transit services, including the addition of new routes, more flexible scheduling, real-time bus tracking, and mobile ticketing. These enhancements could address some of the existing barriers and encourage more frequent transit use.

Based on the survey findings, the following recommendations are proposed to improve transit services and increase ridership to the Santucci Justice Center:

- **Expand Route Coverage:** Introduce new or modified routes that provide more direct access to the Santucci Justice Center from areas with a high concentration of visitors and employees. This would improve accessibility for individuals who currently rely on other forms of transportation.

- **Adjust Schedules:** Align bus schedules more closely with the operating hours of the courthouse, especially during early mornings and late afternoons. Increased frequency of service during peak commute hours could also help meet the demand from daily visitors.
- **Improve Marketing and Communication:** Launch targeted campaigns to raise awareness of the existing Roseville Transit services. This could include promoting the new routes and improved schedules as they become available, ensuring that employees and visitors are fully informed.
- **Implement Real-time Tracking and Mobile Ticketing:** The introduction of real-time bus tracking and mobile ticketing could enhance the user experience and reduce perceived inconvenience. These features would make it easier for passengers to plan their trips and reduce the frustration of long wait times.
- **Address Travel Time Concerns:** Consider creating express routes or reducing the number of stops on key routes to shorten travel times. These measures could make public transit more competitive with driving, especially for individuals who prioritize speed and convenience.

These recommendations provide actionable steps that Roseville Transit could take to better serve the courthouse community and increase transit ridership. By addressing the barriers identified in the survey and implementing new services, Roseville Transit has the opportunity to improve the overall transit experience for its users.

Draft Recommendations

EXECUTIVE SUMMARY

INTRODUCTION TO THE CHANGING LANDSCAPE OF ROSEVILLE

Roseville is experiencing rapid growth and transformation, driven by population expansion, suburban development, and increasing economic opportunities. As new residential areas emerge and more people move to the city, there is an escalating demand for public transit to support this growth while maintaining sustainable urban mobility. The current transit system must evolve to meet the needs of a growing population and provide reliable, efficient transportation options that reduce congestion, improve connectivity, and contribute to the city's environmental goals.

Public transit plays a pivotal role in shaping the future of Roseville, helping to balance the needs of a larger, more mobile population while addressing the city's sustainability objectives. As Roseville continues to grow, the transit system must offer enhanced coverage, increased frequency, and more flexible services to keep pace with rising demand.

The **Transportation 360** project recognizes this challenge and outlines a comprehensive set of recommendations to transform Roseville Transit into a system equipped to serve the city's future needs. The project aims to develop a transit system that is accessible, efficient, and aligned with Roseville's growth trajectory. This report provides the framework for implementing the necessary changes, starting with enhancing the rider experience and extending through to detailed service expansions and financial planning.

TRANSIT EXPERIENCE

A key element in transforming Roseville Transit is focusing on the **rider experience**. Public engagement played a crucial role in shaping our understanding of how the current transit system performs and what changes are needed to better serve the community. Feedback gathered from residents highlighted several factors that influence transit usage, including service reliability, convenience, and the overall quality of the transit experience.

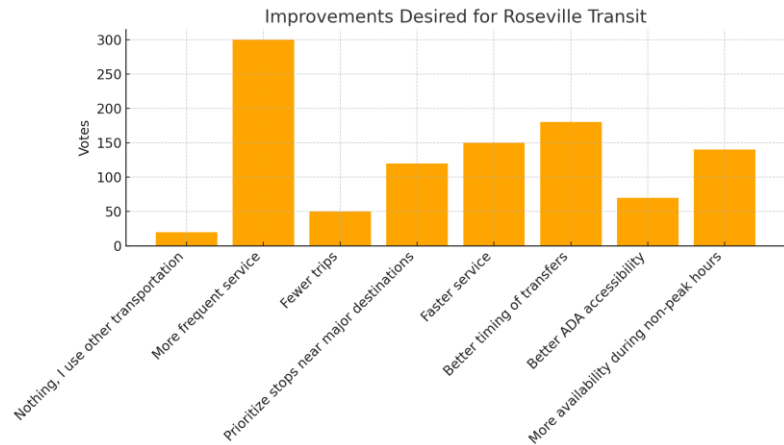


Figure 19 - Desired Improvements to Roseville Transit

While many residents expressed satisfaction with aspects like cleanliness and ease of payment, others pointed out areas for improvement, such as schedule consistency, seating comfort, and the availability of parking at key transit hubs. Common barriers preventing more frequent transit use include long wait times, service delays, and a lack of transit options in certain neighborhoods.

Focusing on rider experience will enable Roseville Transit to address these concerns head-on. By improving timeliness, enhancing stop amenities, and optimizing service frequency, the transit system can become a more attractive option for both regular and occasional riders. Ensuring that transit services are reliable, comfortable, and easy to use is essential for boosting ridership and building long-term loyalty.

PROJECT GOALS AND OBJECTIVES

Elevate the Transit Experience



Achieve a Modal Shift Towards Public Transit

Foster Sustainable Urban Mobility

Enhance Data-Driven Decision-Making in Transit Planning

Transportation 360 was developed with a clear set of goals and objectives, informed by detailed ridership analysis, public feedback, and the changing landscape of Roseville. The primary aim of these goals is to transform Roseville Transit into a system that is more accessible, efficient, and aligned with the city's long-term sustainability and growth objectives.

KEY OBJECTIVES

1. Enhancing Coverage

- One of the main goals is to improve transit coverage across Roseville, particularly in newly developed or underserved areas. The introduction of new services like the **Arrow Service** and **Rapid Link** will increase the system's reach, ensuring that more residents have access to reliable transit options.

2. Increasing Frequency and Reducing Wait Times

- Another core objective is to increase service frequency across all transit modes, reducing the average wait time for riders. This is particularly important for **Local Service**, where a minimum of **10 passengers per hour** will be targeted, and buses will run every 30 minutes to improve service reliability.

3. Improving Rider Experience

- Public engagement revealed a need to improve the overall rider experience, with a focus on service reliability, seating comfort, and ease of transfers between different transit modes. Addressing these concerns will make transit more attractive to new and existing riders.



- Key actions include improving the timeliness of service and upgrading amenities at key stops to enhance rider satisfaction.

4. Sustainability and Environmental Goals

- Reducing Roseville’s carbon footprint is a key part of the city’s transit transformation. By encouraging residents to shift from personal vehicles to public transit, the system will help reduce traffic congestion and emissions.
- The projected ridership increase, from 241,681 total riders in FY 2026 to 324,243 by FY 2035, supports this goal, with the adoption of Rapid Link and Arrow Service contributing to a more sustainable transit system.
- Rapid Link will use an entirely electric fleet, with other services transitioning to electric vehicles in the coming years.



BENEFITS TO TRANSIT AND NON-TRANSIT USERS

The goals outlined in this project benefit not only transit riders but also the wider Roseville community. Expanded coverage and more frequent services will reduce congestion on major roads, improve air quality, and make the city more accessible for all residents. These objectives also support the city’s broader **mobility and sustainability goals**, contributing to a higher quality of life for everyone, whether they use public transit regularly or not.

SERVICE FRAMEWORK

A well-structured service framework has been designed to accommodate Roseville’s growing population and evolving transit needs. This framework focuses on providing different service types to meet the city’s diverse transportation demands, improving connectivity, and ensuring the efficient use of resources. The Service Framework encompasses three core types of transit services: **Local Service**, **Arrow Service (On-Demand)**, and **Commuter Service**. Each service is tailored to meet the unique requirements of different rider segments and travel patterns.

1. Local Service



- **Purpose:** Local Service is designed to serve high-density roadways with fixed routes, offering frequent and reliable transportation between neighborhoods and key destinations like shopping centers, medical facilities, and downtown Roseville.
- **Service Standards:** Buses will run every 30 minutes on **interzonal routes**, ensuring that residents across the city have access to convenient transit options. A key goal is to achieve a minimum of **7-10 passengers per hour** on new routes, ensuring efficient use of transit resources.

2. Arrow Service (On-Demand Zones)

- **Purpose:** New zonal Arrow Service replaces the existing city-wide dial-a-ride system with specific on-demand service zones. This service offers riders flexibility, allowing them to travel within a designated zone without the need for transfers. For cross-zonal trips, riders can connect to fixed Local routes.
- **Service Standards:** Arrow Service provides **customized transit** for residents in less densely populated areas, offering trips when and where they are needed. This service model addresses the needs of residents who may not be well-served by fixed routes.



3. Commuter Service

- **Purpose:** Commuter Service is designed for residents who need efficient, direct transportation to employment centers during peak hours. This express service reduces travel times and improves connectivity to major job hubs, such as Sacramento.
- **Service Standards:** Commuter routes will prioritize **express trips** during peak commute hours (5–9 am and 3:30–6:30 pm), minimizing stops to provide faster travel times for commuters.

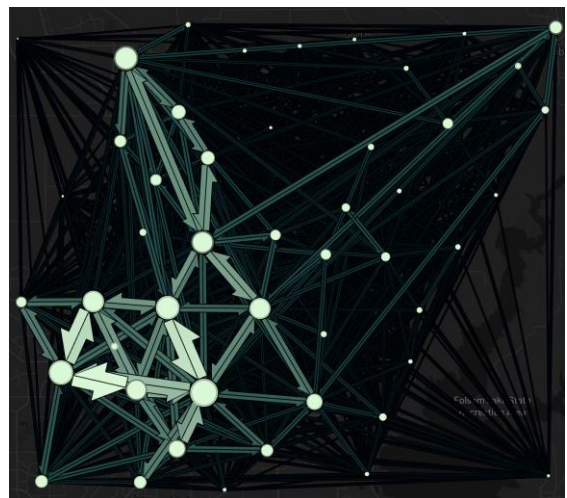


4. Rapid Link Service

- **Purpose: Rapid Link** is a new service designed to offer high-frequency, limited-stop express routes along key corridors between Lincoln and light rail stations in Sacramento. It will provide a faster alternative for commutes, connecting major residential areas to employment hubs and commercial centers.
- **Service Standards:** Rapid Link will offer **frequent service during peak hours**, with a limited number of stops, to reduce travel time for riders traveling longer distances.

TRAVEL PATTERNS

A key element of the **Transportation 360 Project** is understanding the travel patterns of Roseville residents. By conducting a comprehensive **Origin-Destination Analysis**, we were able to identify high-demand travel corridors, underserved areas, and the most common travel behaviors of the city's population. This data-driven approach ensures that transit service expansions are strategically aligned with actual travel needs, optimizing coverage and improving overall system efficiency.



KEY FINDINGS FROM THE ORIGIN-DESTINATION ANALYSIS

1. High-Demand Corridors

- The analysis revealed several high-demand travel corridors where residents frequently commute between residential areas and key destinations like employment centers, schools, shopping areas, and healthcare facilities.
- These corridors include routes between West Roseville and the downtown area, as well as connections to major job hubs in Sacramento. Peak-hour demand was particularly high along these routes, indicating a need for expanded Commuter Service and more frequent Local Service during critical times.

2. Underserved Areas

- The analysis also highlighted areas of the city where transit coverage is currently lacking, particularly in newly developed neighborhoods on the city's outskirts. Many residents in these areas rely on personal vehicles due to limited access to public transit.
- By expanding the **Arrow Service (On-Demand)** into these areas, Roseville Transit will be able to address the needs of these residents, offering more flexible and accessible transportation options without the need for fixed routes in low-density zones.

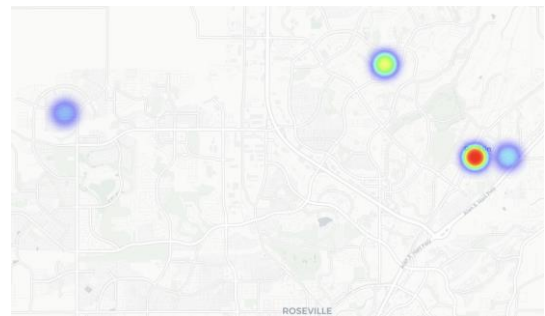


Figure 21 - Underserved Trip Generators

3. Peak and Off-Peak Travel Patterns

- The analysis showed distinct differences between peak and off-peak travel times. During peak hours, there was significant demand for direct, fast connections between residential areas and employment hubs. Off-peak hours saw more localized trips within neighborhoods or to nearby shopping centers and medical facilities.
- This data supports the introduction of the **Rapid Link Service**, designed to meet the needs of peak-hour commuters while maintaining a strong network of Local and Arrow services during off-peak times.

METHODOLOGY

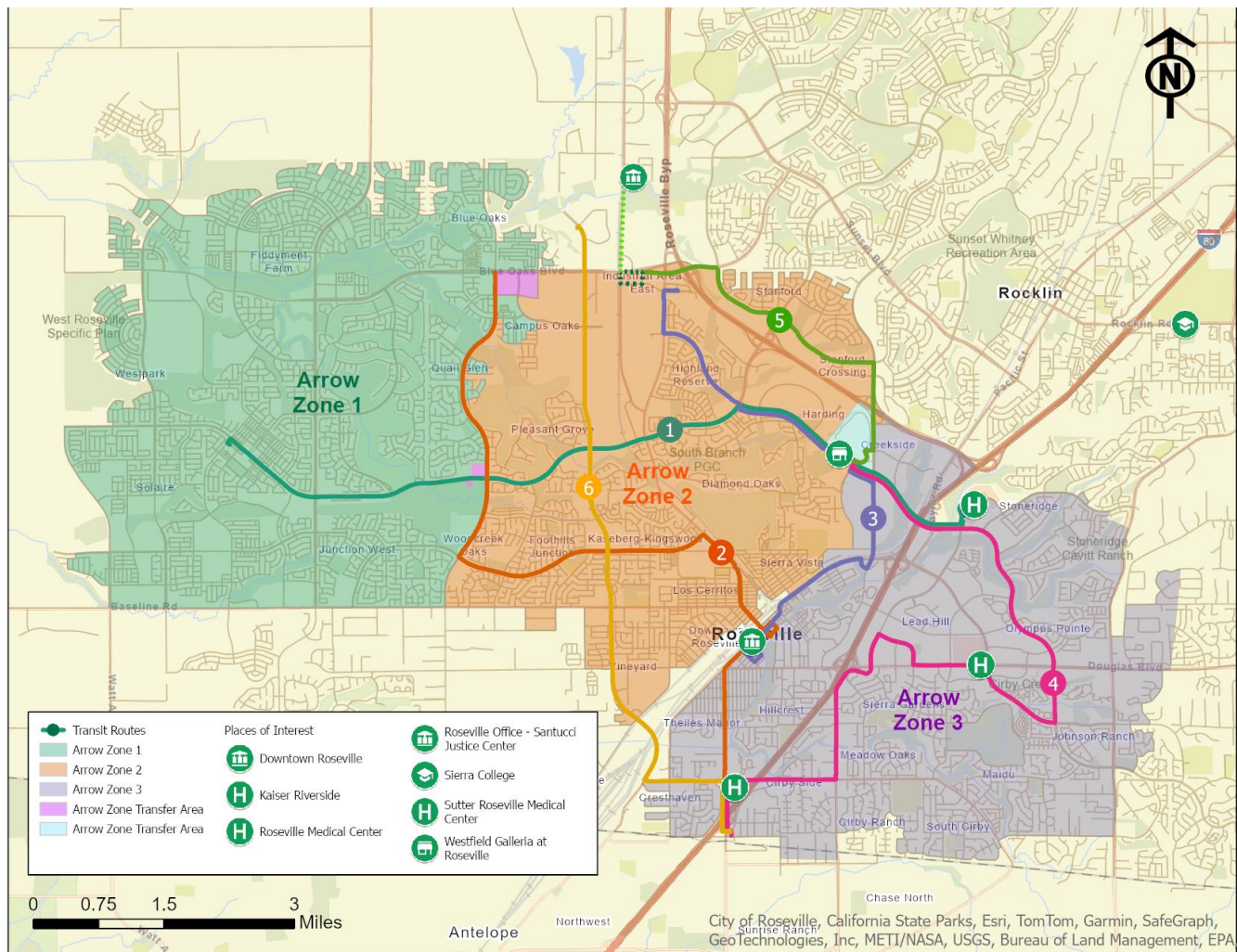
- The **Origin-Destination Analysis** used a combination of rider survey data, historical ridership patterns, and traffic flow modeling. This information was further supported by **cellular data tracking** to capture real-time travel patterns across different areas of the city.
- The analysis provided insights into travel demand based on time of day, day of the week, and trip purpose (work, leisure, shopping, medical). By aligning transit services with these patterns, Roseville Transit can better serve both regular commuters and occasional riders.

IMPACT ON SERVICE PLANNING

- The insights gained from the travel pattern analysis directly informed the decisions on where and how to expand Roseville Transit's services. For example, high-demand corridors identified in the analysis are being prioritized for **Rapid Link** and **Commuter Service** expansions, ensuring that these routes can accommodate increasing ridership during peak hours.
- Additionally, the flexibility of the **Arrow Service** is being tailored to underserved areas where demand fluctuates, providing personalized, on-demand transit to residents in low-density regions without the inefficiencies of fixed-route systems.

By using detailed travel pattern data, Roseville Transit will be able to optimize its resources, expand service where it is most needed, and improve overall rider satisfaction.

IMPLEMENTATION PLAN



The **Transportation 360 Implementation Plan** provides a phased approach to transforming Roseville Transit into a system that meets the growing demands of the city's population. The plan ensures a smooth, strategic transition by expanding services in stages, allowing time for adjustments, and ensuring service reliability during the transformation. This phased implementation focuses on increasing service capacity, introducing new services like **Rapid Link**, and optimizing existing routes.

The **Preferred Service Plan** for Roseville Transit represents a comprehensive and forward-looking strategy to meet the city's growing transit needs while managing rising operational costs due to the upcoming contract increase and inflation.

This plan focuses on expanding service coverage, increasing service frequency, and improving connectivity, all while ensuring cost-effectiveness and sustainability for long-term growth.

Implementation Plan Overview

The Preferred Service Plan will be rolled out in **four phases**, each building upon the previous to ensure a smooth transition, minimal service disruptions, and efficient resource allocation:

Phase 0 (February/March 2025): Preparation and Initial Setup

- Data collection on current ridership, travel patterns, and system performance.
- Integration of new technologies for on-demand services and real-time transit information.
- Public engagement to inform the community of upcoming changes and gather feedback.
- Staff training for new systems, routes, and service models.

Phase 1 (April 2025): Commuter Services and Rapid Link Introduction

- Redesigned commuter services focusing on direct and frequent routes to Downtown Sacramento.
- Launch of the Rapid Link Service, providing high-frequency, limited-stop service along key corridors to reduce travel times and improve efficiency.

Phase 2 (July 2025): Initial Service Changes

- Introduction of new Local routes, Arrow zones, and elimination of underperforming routes.
- Arrow service will be divided into zones to reduce travel and wait times, focusing on high-demand areas.

Phase 3 (January 2026): Expansion and Enhancement

- Expansion of Local services with increased frequency, particularly during peak hours.
- Further development of Arrow on-demand zones to cover more areas, enhancing accessibility.
- Enhancements to commuter routes, reducing travel times and increasing direct service to employment centers.

Ridership and Hourly Projections for the Preferred Service Plan

Under the **Preferred Service Plan**, ridership is projected to increase significantly across all service types by FY 2035, with particularly notable growth in the **Arrow** and **Commuter** services.

- **Local Service:** Currently serving 133,564 passengers annually, Local service is expected to grow by 22% to 163,683 passengers by FY 2035. This increase is driven by improved frequency and optimized route coverage, making the system more accessible and convenient for residents.
- **Arrow Service:** The most dramatic growth is projected for the on-demand Arrow service, which is expected to grow from 24,116 passengers currently to 41,607 passengers, a **73% increase**. This reflects the enhanced flexibility and efficiency of the on-demand model, particularly as the Arrow zones expand to serve new areas.
- **Rapid Link Service:** Introduced in Phase 1, the Rapid Link service will start with an estimated 85,934 riders in FY 2026, growing to 88,567 by FY 2035. This limited-stop, high-frequency service is designed to meet the needs of longer-distance commuters, making transit a more attractive option for those traveling to major employment hubs.
- **Commuter Service:** Commuter service is also expected to see significant growth, from 29,039 to 67,534 passengers, a **133% increase**. This growth is largely due to improved direct routes to Downtown Sacramento and other employment centers, as well as better connections with regional transit systems.

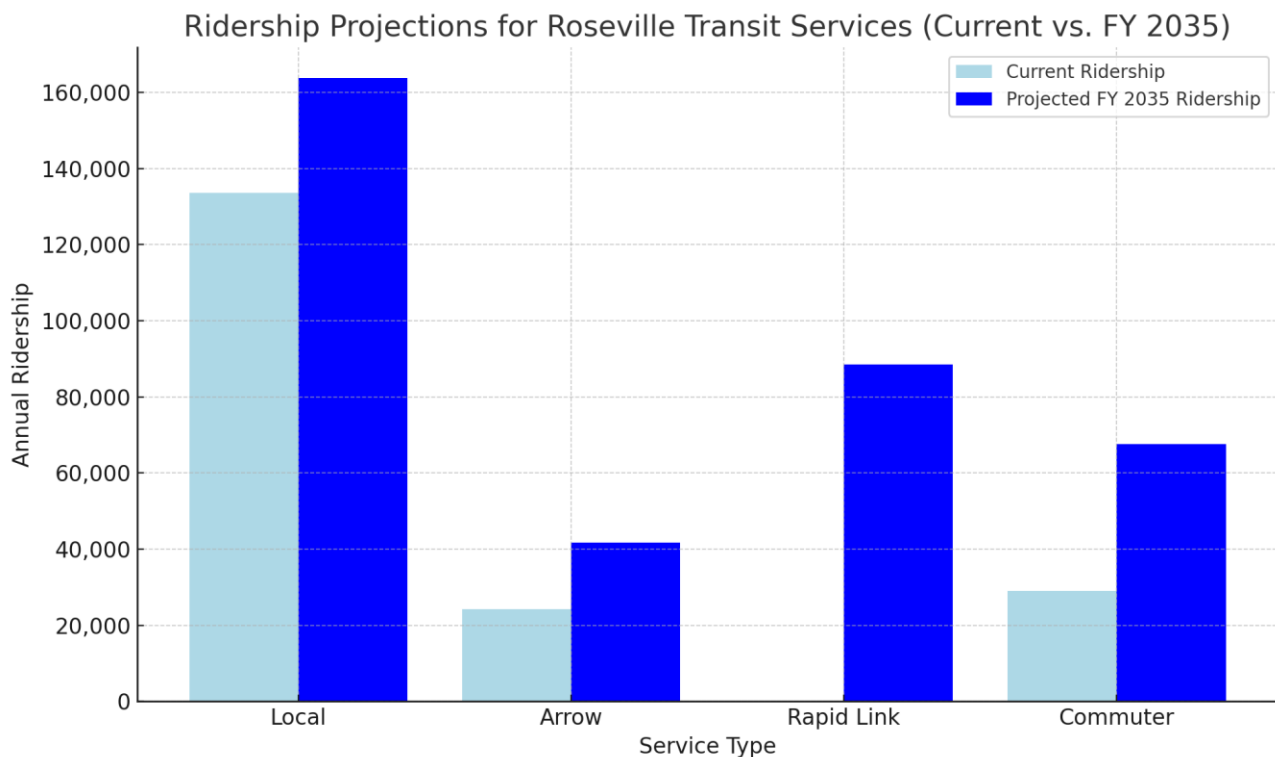


Figure 22 - Ridership Comparison

The projected ridership increases reflect the enhanced reliability, frequency, and coverage provided by the Preferred Service Plan. By improving connectivity and reducing wait times, Roseville Transit will not only attract new riders but also retain current users, ensuring that the system remains a valuable public resource.

Current Service Hours: At present, Roseville Transit operates **46,559 annual service hours**. This level of service, while adequate for current ridership levels, will not be sufficient to meet future demand as the city grows and the transit system expands under the Preferred Service Plan.

Preferred Service Plan Projections: Service hours are projected to grow from **46,559** hours in 2024 to **79,519** hours by FY 2035. This represents a **70% increase** over the current service level, reflecting the need for expanded coverage, more frequent services, and enhanced connectivity.

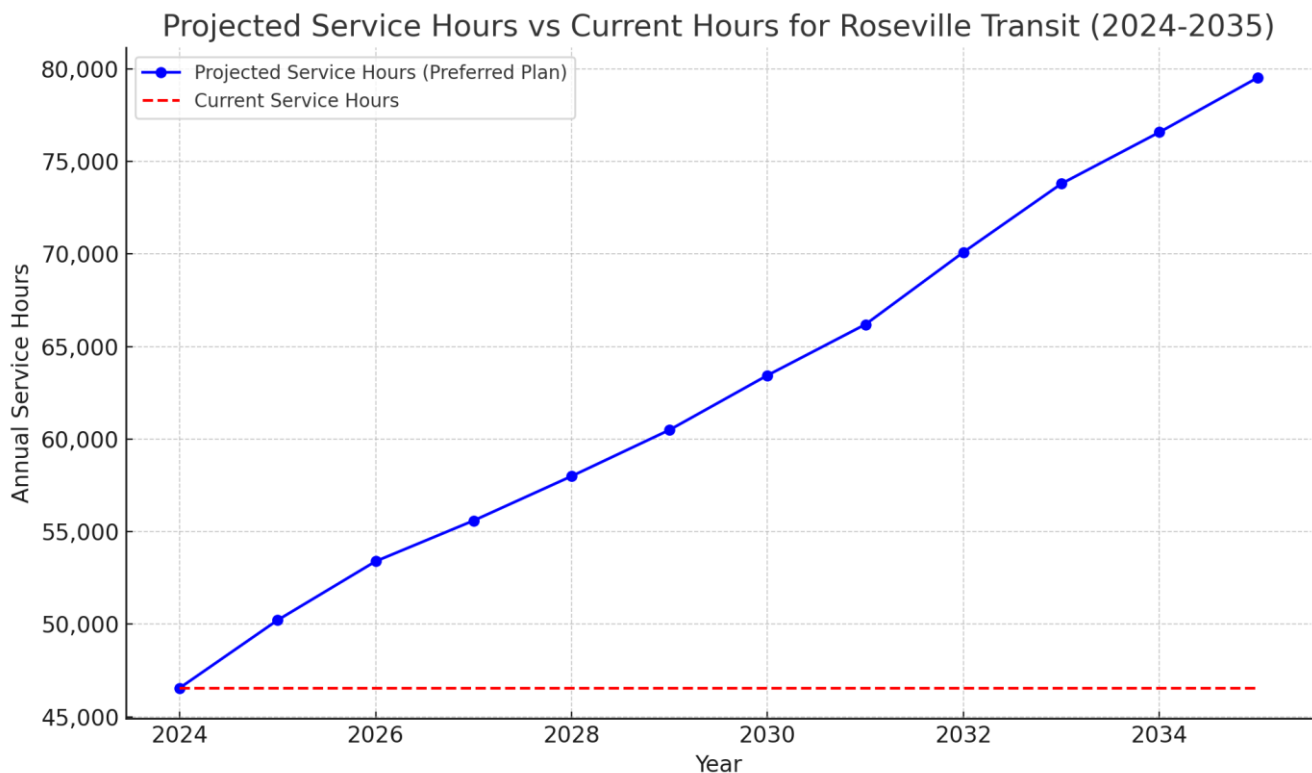


Figure 23 - Service Hour Projection Comparison

The gradual increase in service hours is a key feature of the phased implementation plan. In Phase 1, the introduction of **Rapid Link** and enhancements to the **Commuter services** will drive initial growth in service hours.

By Phase 2 and Phase 3, further increases will be seen with the expansion of **Arrow zones** and improvements to **Local routes**, ensuring that Roseville Transit can effectively meet the needs of a growing population.

The **Preferred Service Plan** is designed to be flexible and scalable, allowing for gradual increases in service hours that align with ridership growth and demand. This phased approach ensures that Roseville Transit can maintain high service quality while managing operational costs and resource use effectively. The result is a system that can adapt to the city's needs, ensuring that public transit remains an accessible and reliable option for all residents.

Key Enhancements of the Preferred Service Plan

1. Faster, More Frequent Service:

- Local routes will operate every 30 minutes (except for Route 2, which will operate every 60 minutes), improving reliability and reducing wait times.
- Arrow zones will be optimized for shorter wait and travel times, offering more efficient on-demand service.
- Direct service to Downtown Sacramento will provide faster, more convenient commuter options.

2. Better Connections:

- Expanded **Arrow service** to cover the **West Park region** and new routes along **Blue Oaks** to serve growing residential areas.
- Improved service to key destinations like Downtown Sacramento, major medical centers, and shopping areas.
- New service connections to **Watt/I-80 Light Rail** and the growing **Richards Blvd Offices**, offering enhanced regional transit integration.

3. Optimized Route Efficiency:

- Reduction in service overlap by focusing Local routes along major roads and eliminating one-way loops, allowing bi-directional service on all routes.
- Improved coordination with **Placer County Transit** for services to **Sierra College**, ensuring seamless transfers and better regional connectivity.

Conclusion: Why the Preferred Service Plan is the Best Path Forward

The **Preferred Service Plan** is designed to provide the best balance between service expansion, operational efficiency, and cost management for Roseville Transit. While this plan comes with higher costs due to expanded service coverage and increased frequency, it is the most comprehensive approach to meeting the city's growing transit needs. By implementing the plan in phases, Roseville Transit can adapt to real-time feedback, adjust services as necessary, and ensure that resources are allocated efficiently.

The projected ridership and service hour increases reflect the system's potential for growth, with enhancements like **Rapid Link** and **expanded Arrow zones** ensuring that the city remains well-connected and accessible. Moreover, with strategic adjustments to service frequency, route efficiency, and regional connections, Roseville Transit will be well-positioned to meet the demands of its growing population while staying financially sustainable.

By adopting the **Preferred Service Plan**, Roseville Transit can continue to evolve as a critical public resource, providing a high-quality, efficient, and future-focused transit network for the community.

FARE RECOMMENDATIONS

As part of the **Preferred Service Plan**, several fare adjustments are recommended to align with the overall goals of financial sustainability, equity, and improving rider experience. While these recommendations are not definitive, they provide a framework to guide future fare policy decisions.

- **Local Service:** Maintain the current fare structure, with a single ride priced at **\$1.50** and a discounted fare at **\$0.75**. The **10-Ride Pass** will be eliminated, while the **30-Day Pass** remains at **\$58.00** to support frequent riders.
- **Commuter Service:** Increase the **single ride fare for residents** from **\$3.25 to \$4.00**. Non-resident fares and multi-ride passes will be eliminated due to their minimal contribution to total revenue (<5%).
- **Arrow Service:** Align Arrow fares with Local services, reducing the single ride fare from **\$3.75 to \$1.50** and the discounted fare from **\$2.50 to \$0.75**. ADA paratransit fares will remain at **\$2.50**.

As part of the **Preferred Service Plan**, Arrow service will transition to a **zone-based structure** aimed at improving efficiency by reducing travel times and wait times within defined service areas.

To support this shift, the single ride fare for Arrow will be **reduced from \$3.75 to \$1.50**, aligning it with Local service fares. This fare reduction ensures that on-demand transit remains affordable, particularly as riders traveling outside their designated zones will need to **transfer to interzonal Local routes**.

Key benefits of this fare reduction include:

- **Improved affordability and equity** for riders, ensuring that on-demand service is accessible to all.
- **Increased ridership** by encouraging use of the Arrow service as a more attractive transit option.
- **Consistency across services**, simplifying the fare structure and making the system easier to navigate.

FLEET REPLACEMENT AND ELECTRIFICATION PLAN

As part of Roseville Transit's long-term vision, fleet management plays a crucial role in ensuring the system's efficiency, cost-effectiveness, and environmental sustainability. A key aspect of the **Preferred Service Plan** is the strategic **rightsizing of the fleet**, focusing on ensuring that the transit vehicles in use are appropriate for ridership levels while preparing for future fleet replacement and electrification in alignment with California's state policies.

Fleet Rightsizing

The **rightsizing of the fleet** refers to adjusting the size and type of vehicles used to better match actual ridership demand. This strategy ensures that larger buses are not being used unnecessarily, which helps reduce operational costs, improves fuel efficiency, and increases overall system sustainability. Based on current and projected ridership levels, Roseville Transit is implementing the following adjustments:

Local and Demand-Response (Arrow) Services: With **Local service** not experiencing consistently high passenger loads, smaller buses and vehicles are more appropriate for many routes. This reduces fuel consumption, wear and tear, and operational costs.

Commuter Service: High-capacity **40-seat, high-floor buses** are essential for **Commuter routes**, as they cater to longer-distance riders traveling to Downtown Sacramento and other employment hubs. Given the comfort needs of longer-distance passengers, these larger buses will remain a critical part of the fleet for Commuter services.

By adjusting fleet sizes based on service type and ridership patterns, Roseville Transit will optimize its resource allocation while maintaining the appropriate level of service for each area.

Fleet Replacement Plan

The **fleet replacement plan** is designed to align with the **Federal Transit Administration (FTA) guidelines** on the **useful life of transit vehicles**, which generally recommends replacing buses after 12 years or 500,000 miles for heavy-duty buses and after 7-10 years for smaller vehicles. Roseville Transit's current fleet includes a mix of vehicles that are nearing or surpassing their recommended replacement age.

The key elements of the replacement plan include:

- **Prioritizing older vehicles** for replacement, particularly those that are at or near the end of their useful life.
- **Phasing out large vehicles** in Local and Demand-Response services where smaller, more efficient vehicles can provide the same level of service.
- **Introducing smaller electric buses** for Arrow and Local routes to increase fuel efficiency and reduce operating costs.

This strategic replacement of older, less efficient vehicles will allow Roseville Transit to maintain reliable service while modernizing its fleet in line with best practices for transit system management.

Fleet Electrification

As part of California's commitment to reducing emissions and transitioning to **zero-emission vehicles (ZEVs)**, Roseville Transit is working to gradually **electrify its fleet** in alignment with the state's regulations and the Innovative Clean Transit (ICT) initiative. Electrification offers both environmental and financial benefits, including lower greenhouse gas emissions, reduced fuel costs, and eligibility for state and federal grants.

Key aspects of Roseville Transit's electrification plan include:

- **Rapid Link Electrification:** The new **Rapid Link service** will be fully electric from its introduction, with **five electric buses** serving key corridors. This ensures that the transit system's most frequent, high-capacity routes are operating with zero emissions.

- **Electrification of Local and Arrow Fleets:** Smaller electric vehicles will be introduced for **Local and Arrow services**, which are more suited to the flexible, lower-capacity nature of these routes. The introduction of **cutaway electric buses** and **electric vans** will help reduce the transit system's carbon footprint while also lowering operational costs in the long run.
- **Charging Infrastructure:** To support fleet electrification, Roseville Transit is already installing **overhead charging infrastructure** at key locations, such as the **Galleria Transit Hub**. This infrastructure will allow for fast, efficient recharging of electric buses during layovers, ensuring that electric buses remain operational throughout the day. As electrification expands, additional charging stations will be introduced across the city, particularly at strategic hubs like **Downtown Roseville**.

By phasing in electric vehicles and expanding charging infrastructure, Roseville Transit will be able to meet state-mandated emission reduction targets while simultaneously improving cost-efficiency. This electrification initiative aligns with Roseville's broader sustainability goals, making the transit system a model for environmentally responsible public transportation.

THE CHANGING LANDSCAPE OF ROSEVILLE

Roseville is a city experiencing rapid growth driven by an influx of new residents and the expansion of critical commercial and employment centers. In recent years, Roseville has become a hub for families seeking suburban living and businesses looking for strategic locations near Sacramento. Population density has increased in established neighborhoods and new developments, particularly in the southwestern and northern parts of the city. The city's economic landscape is also evolving, with the expansion of retail hubs, medical facilities, and regional employers contributing to a more vibrant and diverse local economy.

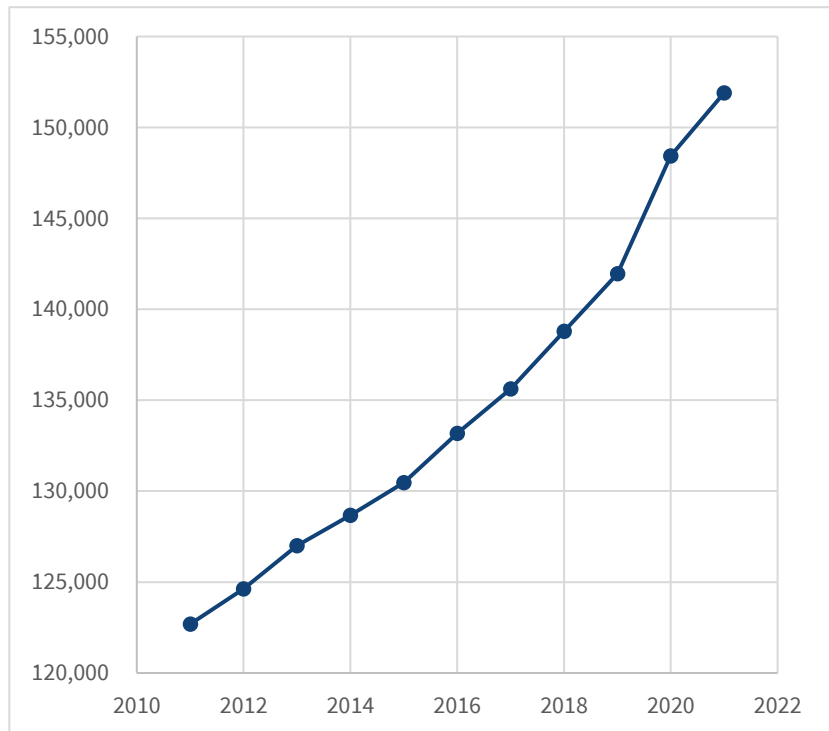


Figure 24 - Roseville Population Growth over Time

With this growth comes the need for improved public services, including transportation. The city's transportation infrastructure ensures residents can access employment, education, healthcare, and recreational opportunities. However, Roseville's current transit system is facing pressure to keep pace with the city's growth, adapt to shifting commuting patterns, and meet the expectations of a diverse and growing population.

The Role of Transit in a Growing City

As Roseville continues to expand, public transit plays a crucial role in shaping the city's future. Transit offers a sustainable solution to reduce traffic congestion and environmental impacts and ensures that all residents, regardless of income or mobility challenges, can access the city's opportunities.

By investing in an efficient, reliable, and accessible transit system, Roseville can enhance its appeal as a desirable place to live and work while promoting economic vitality and environmental sustainability.

Currently, Roseville Transit provides valuable services, but there are opportunities to expand coverage, improve service frequency, and offer more flexible transit options. The city's growth demands a transit system that is not just reactive to current needs but forward-thinking—anticipating future demand and integrating innovative approaches like on-demand services and electric vehicle fleets.

LOCAL TRANSIT

From 2021/22 to 2023/24, Roseville Transit's local services have experienced significant ridership growth, driven by both the gradual recovery from the COVID-19 pandemic and a renewed demand for public transportation in the city. In 2021/22, the total annual ridership was 107,127, which increased by 9,874 riders to reach 117,001 in 2022/23, reflecting a 9.2% growth year over year. This initial growth can be attributed to the gradual return of commuters and regular transit users as pandemic-related restrictions were lifted and confidence in public transportation began to recover.

The year 2022/23 saw further improvements in service and public health, leading to another surge in ridership in 2023/24. During this period, ridership increased by 16,563 riders, reaching a total of 133,564 riders—a 14.2% growth over the previous year. This accelerated growth highlights the continued restoration of transit services as more residents returned to their daily commutes, and the demand for accessible, reliable public transportation grew in line with the city's population.

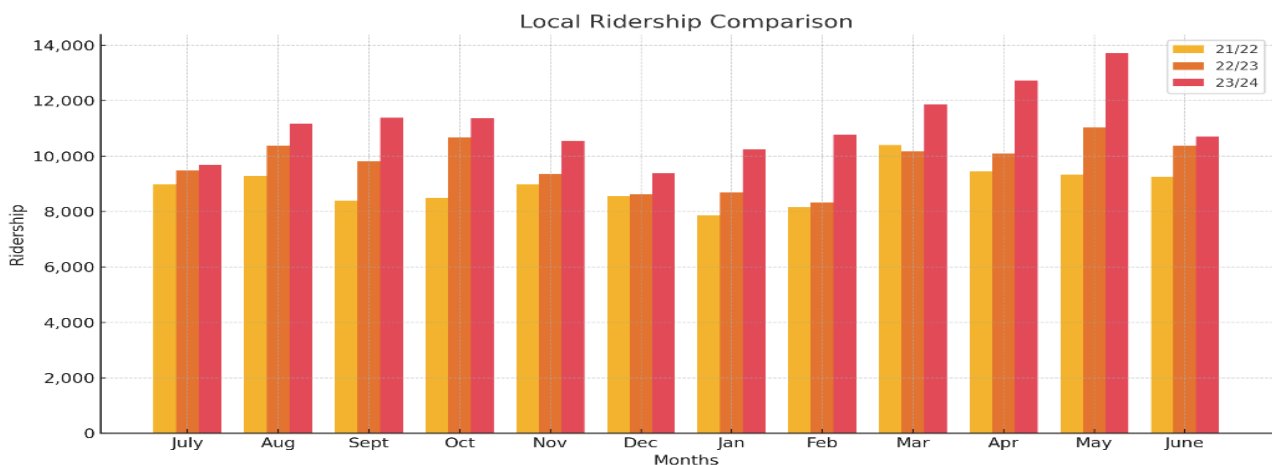


Figure 25 - Local Ridership Comparison

During the pandemic, Roseville, like many other cities, saw a substantial drop in transit usage as stay-at-home orders and the shift to remote work dramatically reduced daily ridership. However, by the end of 2022, as the effects of the pandemic began to wane and workers returned to their offices—either fully or in hybrid formats—local transit services started to see recovery. The growth in ridership over these three years reflects the transit system’s ability to adapt to the changing needs of residents while maintaining consistent service availability.

In comparing ridership growth to population growth, transit demand is increasing at a faster rate than the city’s population, which has grown at a steady pace of about 1.7% to 2% annually. This suggests that transit is becoming more attractive and necessary for a growing segment of the population, potentially driven by factors such as increased traffic congestion, higher fuel costs, and improved service quality.

ADA/DIAL-A-RIDE

Roseville Transit’s demand services, including Dial-a-Ride and ADA services, have demonstrated significant growth from 2021/22 to 2023/24. In 2021/22, the total ridership for demand services was 21,871. This increased to 23,887 riders in 2022/23, reflecting a 9.2% growth over the previous year. This steady increase highlights the recovery of demand services usage as the city emerged from the disruptions caused by the COVID-19 pandemic.

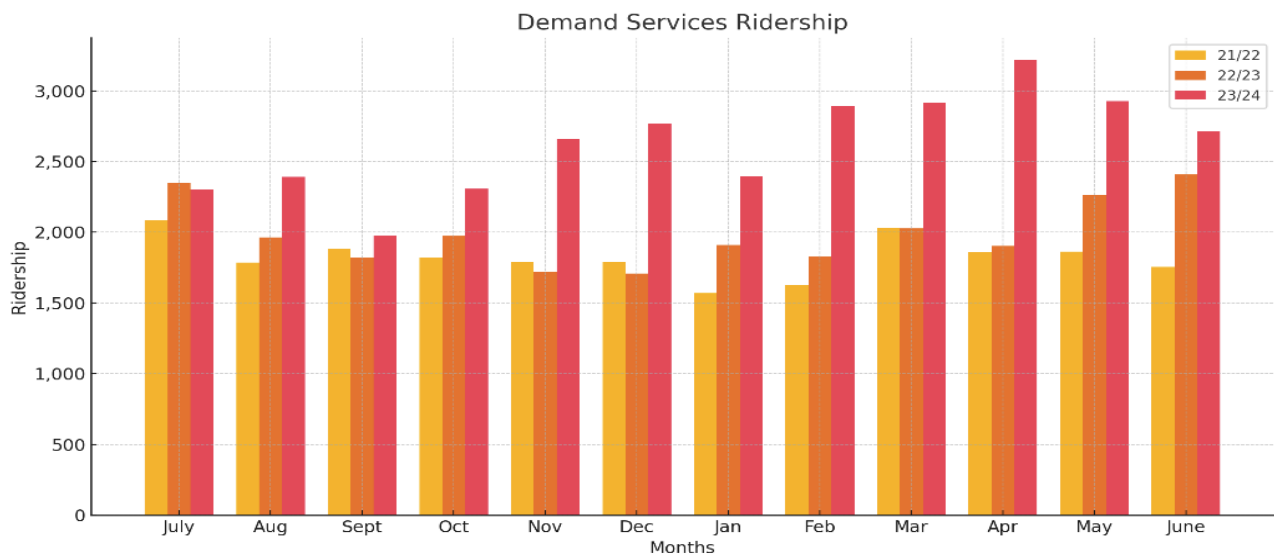


Figure 26 - Demand Services Ridership Comparison

A substantial shift occurred in April 2023, when Roseville transitioned from a manual dispatch system to a technology-enabled platform powered by Spare Labs, allowing for accurate on-demand service dispatching. This change improved operational efficiency and made it easier for riders to access the service in real-time. As a result, demand services saw a sharp increase in ridership, with total ridership rising to 32,009 for the 2023/24 period—a 34% increase compared to the previous year.

From April 2023 onward, the impact of this technological upgrade became particularly evident. Ridership numbers in April 2023 jumped to 3,216, nearly double the 1,859 riders recorded in April 2022. The streamlined, technology-enabled platform allowed Roseville Transit to manage trip requests better and serve more riders without the delays and inefficiencies of manual dispatching. Subsequent months, including May and June 2023, also saw higher ridership figures, with May reaching 2,927 and June recording 2,711 riders. These increases reflect the platform's success in improving the accessibility and responsiveness of the service, encouraging more residents to use Dial-a-Ride and ADA services for essential trips, healthcare visits, and social activities.

This change in platform aligns with the growing demand for flexible, accessible transportation solutions in a rapidly expanding city. As the city's population continues to grow by 1.7% to 2% annually, demand services have outpaced population growth significantly, reflecting the specialized role these services play in supporting seniors, individuals with disabilities, and those needing reliable, on-demand transportation options.

COMMUTER SERVICES

Roseville Transit's commuter services have seen steady growth from 2021/22 to 2023/24, reflecting both the return of commuters as COVID-19 restrictions eased and increased demand for transportation options connecting Roseville with nearby employment centers. In 2021/22, commuter services had a total ridership of 20,105. This grew to 24,769 riders in 2022/23, reflecting a 23.2% increase. The early stages of this growth can be attributed to the gradual reopening of workplaces and a shift back to in-person work, particularly for employees commuting to Sacramento and other nearby employment hubs.

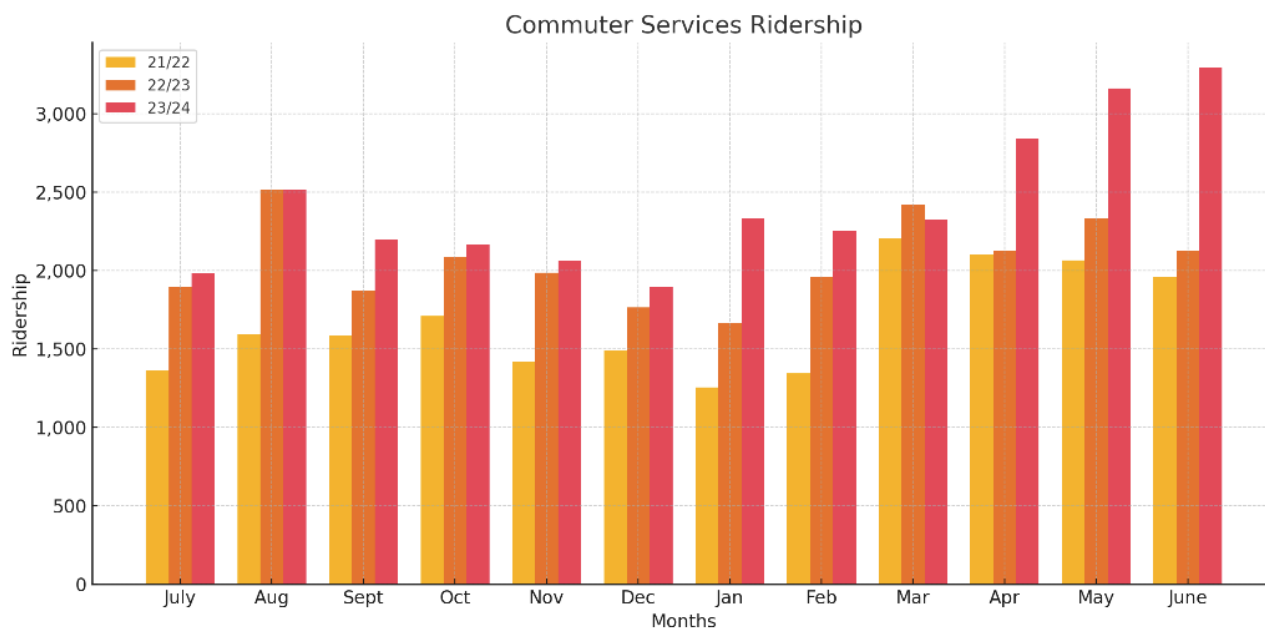


Figure 27 - Commuter Services Ridership

By 2023/24, commuter ridership increased further to 29,039 riders, representing a 17.2% growth compared to the previous year. This growth highlights the importance of commuter services in supporting residents who travel outside the city for work. The steady rise in ridership is likely due to a combination of factors, including improved service frequency, increased commuter confidence in public transportation post-pandemic, and the growing number of businesses requiring workers to return to offices on a full- or part-time basis.

Key monthly trends show consistent growth across the board, with March, April, and June 2024 showing notable increases. In particular, April 2024 saw a spike to 2,844 riders, up from 2,130 in April 2023, reflecting a nearly 33% increase. Similarly, June 2024 dramatically increased, reaching 3,293 riders compared to 2,129 in June 2023. These months may represent seasonal spikes in commuter activity as businesses increase in-office requirements and warmer weather encourages higher transit usage.

The sustained ridership increases highlight commuter services' critical role in Roseville's transit system. While the city's population has been growing at a rate of 1.7% to 2% annually, commuter services have outpaced this growth, underscoring the importance of providing reliable, efficient transportation options for the city's working residents.

This upward trend in commuter ridership aligns with the growing demand for flexible transit solutions that reduce congestion, lower transportation costs for residents, and provide an alternative to driving.

RIDERSHIP OVERVIEW

Over the past three years, Roseville Transit's combined ridership across all modes—local services, demand (Dial-a-Ride and ADA), and commuter services—has seen steady growth, reflecting the city's increasing reliance on public transportation as both the population and transit needs expand.

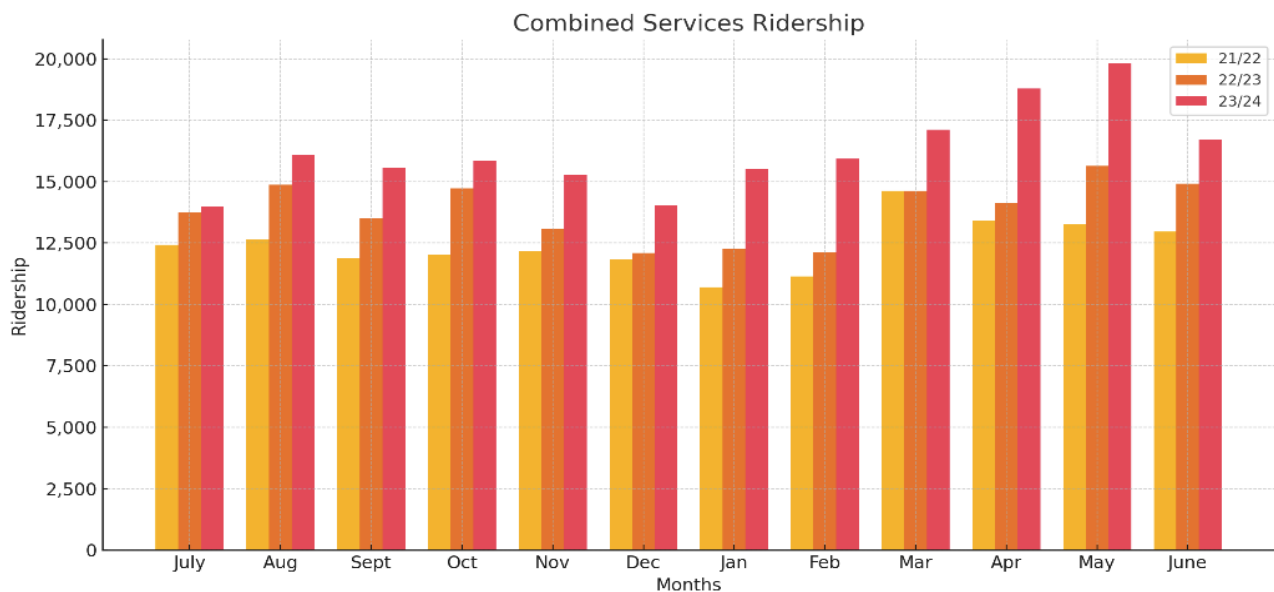


Figure 28 - Total Ridership

In 2021/22, the total combined ridership for all services was 149,102. This marked the beginning of the recovery from the COVID-19 pandemic as more residents started to return to public transportation. The following year, 2022/23, saw total ridership increase to 165,657, an 11.1% growth compared to the previous year. This growth was driven by the return of workers, students, and other residents to their regular routines, as well as an increasing trust in the safety and reliability of transit services as the pandemic eased.

The most significant jump in ridership occurred in 2023/24, with the total ridership reaching 194,612, a 17.5% growth from the previous year. This sharp increase can be attributed to several factors, including improvements in service delivery, such as the transition to the Spare Labs-powered on-demand platform for Dial-a-Ride and ADA services in April 2023. Additionally, the continued return of commuters, the rise in population, and the increased use of transit options across all service types contributed to the surge in ridership.

Monthly data for 2023/24 highlights several key trends, with ridership peaking in the spring and summer months. For example, April 2024 saw a combined ridership of 18,791, up from 14,125 in April 2023—a 33% increase. Similarly, May 2024 had a combined ridership of 19,796, reflecting a sustained increase in transit use as the city continues to expand and improve its services.

Over the three years, total combined ridership has grown by 30.6%, demonstrating that Roseville Transit's services effectively respond to the growing transportation needs of the community. The rise in ridership across all service types suggests that both residents and commuters are increasingly turning to public transportation as a reliable and accessible option.

TRANSIT EXPERIENCE

Transit systems are more than just routes, schedules, and vehicles; they are part of the daily lives of the people who use them. As such, understanding the transit experience—how riders perceive and interact with the system—is just as important as conducting operational or system analysis. Focusing on the experience allows us to see transit through the eyes of the community, recognizing that a successful system is one that not only operates efficiently but also meets the diverse needs and expectations of its riders.

By examining the transit experience, we can understand the barriers that prevent people from using public transportation, identify what current riders appreciate, and explore how to make the system more accessible, convenient, and responsive. This perspective helps us focus on the quality of service—factors like cleanliness, comfort, timeliness, ease of use, and the ability to access key destinations easily—which can often be overlooked in purely technical analyses.

Focusing on the experience also helps us identify gaps between what the system is designed to do and how the community uses it. For instance, a system that operates efficiently on paper may still fail to attract riders if it doesn't align with their schedules or travel preferences. Conversely, transit systems that take user experience into account are more likely to build trust, attract new riders, and retain existing ones.

Through a combination of public feedback, rider surveys, and direct engagement, we gain deeper insights into what improvements will genuinely make a difference for the people of Roseville. Ultimately, enhancing the rider experience creates a transit system that is both functional and desirable, supporting the city's goals for increased ridership, accessibility, and sustainability.

PUBLIC SENTIMENT: WHY PEOPLE DO AND DON'T USE TRANSIT

According to the comprehensive public engagement report, the overall public sentiment around Roseville Transit reflects both satisfaction and room for improvement. The Local Service Survey revealed that satisfaction is mixed, with many respondents expressing satisfaction with certain aspects of the service, such as the ease of payment and cleanliness of the buses. However, other areas—such as timeliness, convenience of routes, and scheduling—were cited as barriers to more frequent use.

For those who don't use transit, the primary reasons include:

- **Inconvenient schedules and routes:** Respondents noted that the existing transit schedules didn't align well with their needs, making it difficult to rely on transit as a consistent option.
- **Preference for personal vehicles:** Many individuals found personal vehicles more convenient, particularly in terms of time savings.
- **Timeliness issues:** Some passengers reported concerns over bus arrival times and the overall length of travel compared to driving.

For individuals who do use transit, the primary purposes include travel for entertainment, work, and education. Despite specific pain points, transit is seen as an essential tool for those without access to a personal vehicle or for trips where public transit provides a more economical option. Respondents also highlighted a desire for more direct connections and expanded service areas, particularly in growing regions such as West Park.

PUBLIC ENGAGEMENT PROCESS

The public engagement process for the Transportation 360 project involved a comprehensive series of activities aimed at gathering feedback from current and potential transit users, as well as non-riders. The process included:

1. **Surveys:** Conducted among both local and commuter riders to gauge satisfaction, identify barriers to transit use, and collect feedback on desired service improvements. Additional surveys targeted ADA Paratransit and Arrow users, gathering insights into how on-demand services could better meet their needs.
2. **Open Houses:** Two major public open house events were held in 2024, the first in April and the second in August. These events provided opportunities for residents to engage directly with project team members, ask questions, and share their thoughts on the proposed improvements to the transit system. Feedback gathered at these open houses highlighted key issues, including ADA accessibility, the desire for faster and more direct routes, and requests for new transit stops in underserved areas.

- 3. FlashVote Surveys:** The City of Roseville also conducted a community-wide survey using the FlashVote tool to capture input from a broader segment of the population. The survey revealed that while 65% of respondents were aware of Roseville Transit, many had yet to use it, with convenience, route availability, and service frequency being cited as factors that could encourage greater use. Additionally, respondents expressed interest in new transit services, including shuttles to Sacramento International Airport, more frequent service, and real-time bus tracking.

This extensive public engagement process has provided valuable insights into Roseville Transit's strengths and areas for improvement. The feedback collected from various segments of the community will be instrumental in shaping the recommendations for service improvements, ensuring that the transit system aligns with the needs and expectations of Roseville's growing population.

TRANSIT EFFECTIVENESS

This report utilized a self-developed tool known as the. Transit Effectiveness Index (TEI) This tool is a comprehensive metric designed to evaluate the performance of Roseville's transit system through two key dimensions: coverage and user experience. Coverage assesses how effectively the transit system serves the city's geographical area and population, ensuring that residents have accessible transit options. User experience focuses on the quality of service from the rider's perspective, including travel time, convenience, and reliability. Together, these components provide a holistic view of how well the transit system performs.

Why is Effectiveness Important?

Effectiveness is critical because a well-functioning transit system needs to do more than operate; it must meet the community's needs. By focusing on coverage and experience, the TEI allows transit planners to understand where transit services are available and how well they serve riders. This dual focus ensures that decision-making goes beyond just operational metrics (such as miles covered or the number of buses on the road) and considers the real-world experiences of transit users.

Key issues contributing to this low user experience score include:

- **Transit vs. Driving Speed:** Transit trips have an average duration of 56 minutes, while non-transit trips average just 11 minutes. This stark difference in travel times is one of the most significant factors driving the negative TEI scores, as transit is not perceived as a time-competitive alternative to driving.
- **Service Gaps:** While coverage is high, the quality and frequency of service in certain areas are not sufficient to meet riders' needs, particularly in more remote or underserved areas.
- **Travel Patterns:** Predominantly north/south travel patterns suggest a need for more localized, efficient transit zones to better accommodate the city's directional travel demands.

This comprehensive evaluation highlights the need for strategic improvements in transit speed and service reliability, as well as potential route optimizations to better serve existing travel patterns. These insights will inform future efforts to make Roseville's transit system not only accessible but also an attractive and competitive alternative to driving.

PROJECT GOALS AND OBJECTIVES

Through the comprehensive evaluation of transit ridership, experience, and effectiveness, it became clear that Roseville Transit is at a pivotal moment. The insights gained from the Transit Experience Index (TEI), public engagement efforts, and detailed data analysis revealed both the strengths and areas where transit services can better meet the needs of the community. While the current system offers solid coverage and serves a diverse range of riders, there are key opportunities to improve the overall rider experience, increase efficiency, and prepare the system for future demand as the city continues to grow.

The focus on transit effectiveness and user experience has emphasized that transit must do more than simply cover geographic areas—it must be a desirable and reliable option for residents who need to move around the city. At the same time, feedback from the community underscored the importance of ensuring that transit options are competitive with driving, particularly in terms of convenience, travel time, and availability. These findings pointed to the need for a strategic vision that not only addresses current gaps but also anticipates the future growth and mobility needs of Roseville.

The goals and objectives outlined below are the culmination of this analysis, designed to guide the evolution of Roseville Transit into a system that is efficient, sustainable, and responsive to the community's needs. These goals aim to ensure that Roseville Transit becomes a preferred mode of transportation for residents while simultaneously reducing traffic congestion, improving air quality, and enhancing the overall mobility landscape. The following goals reflect a comprehensive approach, addressing everything from rider experience to sustainability and innovation, ensuring that both transit riders and non-transit users benefit from a more connected and efficient transit system.

Roseville's transit system is poised to undergo significant improvements, guided by five key goals that aim to enhance the overall transit experience, foster sustainability, and promote effective, data-driven planning. These goals are designed to benefit not only transit riders but also non-transit users by creating a more connected, efficient, and environmentally sustainable transportation network.

1. **Elevate the Transit Experience:** The primary goal is to elevate the overall transit experience for riders by improving accessibility, efficiency, and service quality. The objective is to increase Roseville's Transit Experience Index (TEI) score to above 7.5/10 within five years. By focusing on real-time information systems, improving transit stop amenities (such as shelters and lighting), and optimizing routes to minimize travel times, the system becomes more appealing to both frequent and occasional riders. This benefits non-transit users as well by reducing traffic congestion and improving the overall mobility landscape.
2. **Achieve a Modal Shift Toward Public Transit:** Roseville aims to increase transit ridership by 25% over the next five years, contributing to reduced reliance on personal vehicles. This goal directly benefits transit riders by providing more frequent services and incentivizing public transit use through fare discounts and integrated ticketing. Additionally, a successful modal shift would reduce vehicle emissions and alleviate traffic congestion, benefiting the entire community, including those who do not use public transit.
3. **Foster Sustainable Urban Mobility:** Sustainability is at the forefront of Roseville's transit goals. The city aims to become a leader in urban mobility by integrating environmentally friendly practices, such as transitioning to a low-emission fleet, expanding infrastructure for bicycles and pedestrians, and encouraging green commuting options. These efforts will directly benefit transit riders by offering cleaner, more sustainable transportation choices, while non-transit users benefit from a reduction in the city's carbon footprint and improved air quality.
4. **Enhance Data-Driven Decision-Making:** Roseville intends to leverage advanced analytics and data collection to inform its transit planning decisions. By utilizing a comprehensive data framework to track transit usage, rider demographics, and service performance, the city can make real-time adjustments that enhance efficiency and resource allocation. This will benefit transit riders by ensuring services align with their needs, while non-riders benefit from the optimized use of city resources and infrastructure.
5. **Innovate and Improve Commuter Services:** Recognizing the evolving nature of work and commuting patterns in the post-COVID landscape, Roseville aims to revamp its commuter services to better serve the needs of residents traveling to major employment centers. By introducing flexible, on-demand options and express routes, the city can enhance the speed, convenience, and reliability of its commuter services. These innovations are designed to meet the needs of both current commuters and potential new riders who are looking for efficient alternatives to driving.

These goals collectively benefit both transit riders and non-transit users by creating a more efficient, accessible, and sustainable transit system, improving the quality of life for all Roseville residents. The pursuit of these goals will ensure that the city is prepared to meet the transportation needs of its growing population while fostering a more connected and vibrant community.

SERVICE FRAMEWORK

Having evaluated the current state of Roseville Transit through ridership analysis, public engagement, and a focus on user experience, it is clear that a strategic service framework is essential to support the city's growing mobility needs. The goals outlined in the previous section provide a roadmap for increasing ridership, improving service quality, and fostering sustainability, but achieving these goals requires a carefully structured transit network. This framework defines the core services Roseville Transit will offer and sets clear performance standards to ensure the system operates efficiently, reliably, and in alignment with the city's broader objectives.

Roseville Transit will focus on three primary service types: Local Service, On-Demand Service, and Commuter Service. Each of these services is designed to meet the unique needs of different transit users while ensuring that the system as a whole operates cohesively. The framework also includes specific service standards for each type, ensuring that the system remains efficient, accessible, and responsive to rider needs.

As Roseville's transit system evolves, the need for a well-structured service framework becomes clear. Building on the insights from our Origin-Destination Analysis and the goals outlined in the previous sections, it is essential to establish a clear service structure that aligns with both the community's travel patterns and the city's broader mobility goals. The Service Framework is designed to ensure that Roseville Transit meets the diverse transportation needs of the city's residents while maintaining efficiency, reliability, and accessibility.

This framework defines three core types of transit services: Local, On-Demand (Arrow), and Commuter. Each service type is tailored to different types of trips and rider needs, providing a flexible, high-frequency system that encourages the use of public transportation for daily commutes, personal errands, and longer journeys to employment hubs. By integrating these service types, the transit system can better connect residents to key destinations while supporting Roseville's goals for sustainability, increased ridership, and improved quality of life.

In this section, we outline the role of each service type and the standards by which they will operate, ensuring that Roseville Transit not only serves the community today but is also prepared to meet future demand.

LOCAL SERVICE

Local service will be the backbone of Roseville Transit, providing high-frequency, mass transportation that connects various zones across the city. This service is designed to traverse the entire city, ensuring comprehensive coverage while maintaining efficient operational standards.

- **Interzonal Coverage:** Local service will operate across multiple zones, offering consistent and reliable transit options for riders traveling within and between zones.
- **High Frequency:** Local routes will run frequently, minimizing wait times and making public transit a more competitive alternative to driving.

SERVICE STANDARDS:

- Minimum of 7-10 passengers per hour to ensure cost-effectiveness and resource efficiency.
- Stops will be spaced no more closely than every 1/2 mile to optimize travel times while maintaining accessibility.
- Focus on key corridors and high-demand areas, ensuring that major residential, commercial, and educational zones are well-served by local routes.

ON-DEMAND SERVICE

Roseville Transit's on-demand service, including Dial-a-Ride and ADA services, will continue to serve the specific needs of riders who require more flexible transit options. This service is crucial for individuals with mobility challenges, seniors, and those living in less densely populated areas where traditional fixed-route services may not be practical.

- **Real-Time Availability:** Building on the success of the Spare Labs platform, on-demand services will provide true real-time dispatch and flexibility, allowing riders to request service as needed without relying on fixed schedules.
- **Accessibility:** On-demand services will be designed to accommodate ADA riders and other individuals requiring specialized transportation options.
- **Zone-to-Zone Transfers:** Create zonal overlap regions where on-demand services between zones can meet.

SERVICE STANDARDS:

- Minimum wait and travel times of 20 minutes or less, ensuring that riders receive timely service when they need it.

- Service radius within key zones, connecting riders to central hubs and other transit services for longer trips.
- Focus on efficiency and rider satisfaction, ensuring a seamless experience for all users.

COMMUTER SERVICE

Commuter service will play a critical role in connecting Roseville residents with nearby employment centers, particularly in Sacramento and other regional hubs. As traditional commuting patterns evolve in the wake of the COVID-19 pandemic, Roseville Transit's commuter service must adapt to provide both flexibility and efficiency for today's commuters.

- Express and Direct Routes: Commuter routes will prioritize speed and convenience, offering direct connections to major employment centers and avoiding unnecessary detours.
- Flexible Scheduling: With hybrid work becoming more common, commuter services will be designed to accommodate varied schedules, including both peak-time express routes and off-peak options.

SERVICE STANDARDS:

- Target a minimum of 20 passengers per hour to ensure efficiency on commuter routes.
- Limited stops will reduce travel times and make the service competitive with driving.
- Partnerships with regional employers to ensure service schedules align with work hours and key employment shifts.

This service framework ensures that Roseville Transit provides the right mix of high-frequency, flexible, and specialized services to meet the needs of all riders. By setting clear standards for each type of service, Roseville can optimize its transit system, ensuring efficiency and enhancing the overall rider experience. This framework supports the city's goals of increasing ridership, reducing congestion, and promoting sustainable urban mobility.

TRAVEL PATTERNS

Building on the insights from the Service Framework, understanding how people move through the city is essential for developing a transit system that serves both current and future needs. The Origin-Destination Analysis provides a detailed look at the flow of people through Roseville, uncovering critical patterns in travel behavior. By examining where people start and end their trips, the distances they travel, and how these patterns shift throughout the day, we can make informed decisions about how to optimize transit routes, schedules, and services to better meet the city's mobility demands.

This analysis is key in identifying where high-demand corridors exist, which areas are underserved, and how transit services can be tailored to provide efficient and reliable connections. By focusing on these patterns, Roseville can ensure its transit system is aligned with the actual movement of people, not just static assumptions based on population distribution.

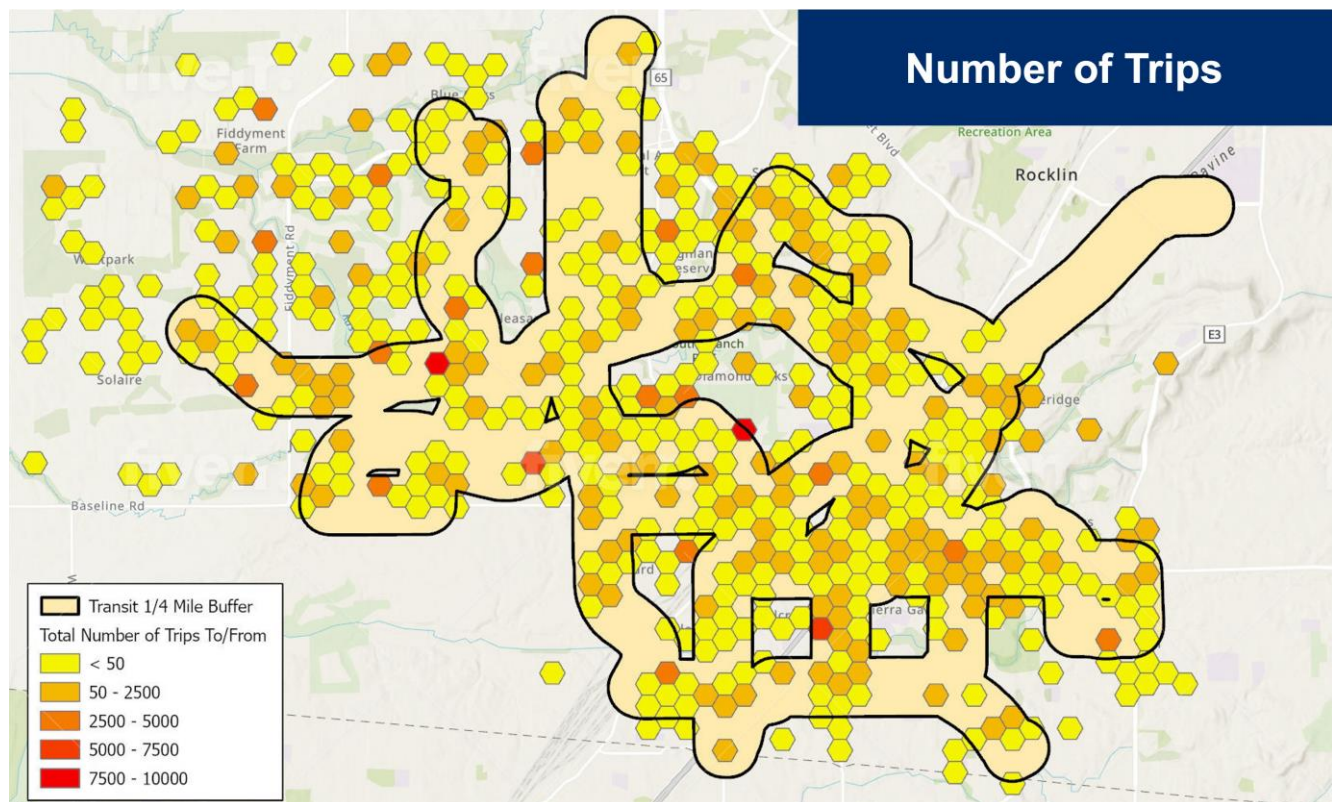


Figure 30 - Roseville Trip Generators

METHODOLOGY

The Origin-Destination Analysis was conducted using GPS and location-based data collected from cell phone users between March and September 2023. Custom algorithms were developed to match user locations within Roseville's urban landscape, tracking trips between centroids (key focal points within the city). This mode-agnostic approach captures travel patterns regardless of whether people are using public transit, personal vehicles, or other modes of transportation. Privacy and ethical data handling were prioritized, ensuring that all data was anonymized.

The analysis focused on identifying high-traffic centroids, understanding intra- and inter-quadrant mobility, and examining travel patterns during different times of the day—AM peak, midday, and PM peak. Each centroid's travel intensity was measured by the number of trips starting or ending there, as well as the distances and durations of those trips.

KEY FINDINGS

- Critical Corridors:** The Northeast to Southeast corridor emerged as a vital route across all time periods, particularly during the AM and PM peak hours. This corridor supports a significant volume of commutes, suggesting the need for enhanced transit services in these areas to accommodate the demand for efficient travel.

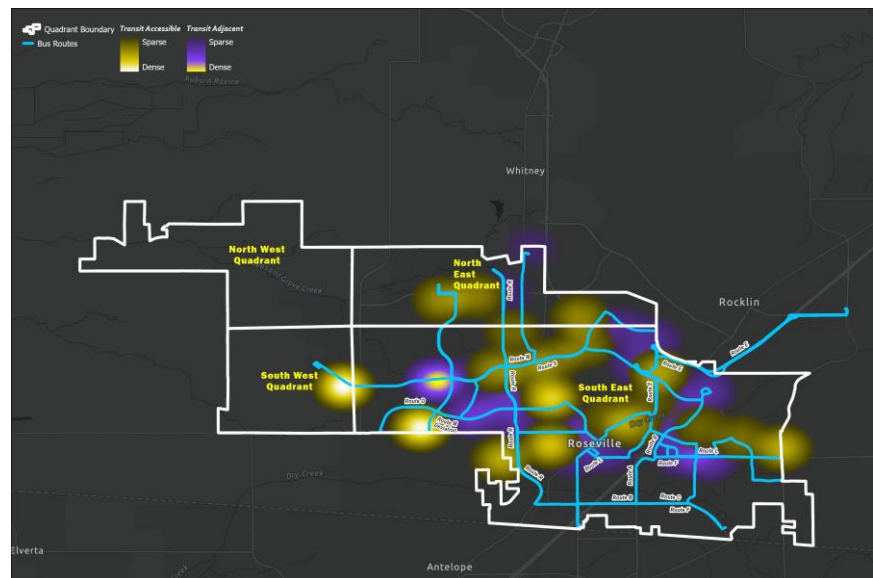


Figure 31 - Origin-Destination Analysis

- **Intra-Quadrant Travel:** Both the Northeast and Southeast quadrants exhibited substantial intra-quadrant travel, meaning many trips occurred entirely within these areas. The average distance for intra-quadrant trips was around 6-7 miles, with durations averaging 13-15 minutes. This suggests a strong demand for localized transit solutions, including more frequent and flexible services within these quadrants.
- **Temporal Variations:** Travel patterns varied significantly throughout the day. The AM peak (8 am to 10 am) was dominated by concentrated travel corridors, particularly along the Northeast to Southeast route, reflecting the traditional commute to work or school. The midday period (10 am to 3 pm) showed a more distributed pattern of travel, indicative of a wider range of activities such as errands, business meetings, and leisure trips. The PM peak (3 pm to 7 pm) mirrored the morning rush, with a return to concentrated travel routes as people made their way home.
- **Extended Travel Beyond Roseville:** Travel patterns extended beyond Roseville, with notable inbound travel from neighboring cities like Auburn, Lincoln, and Rocklin. These areas exhibited substantial inbound and outbound travel during peak hours, with Rocklin accounting for the highest percentage of trips into Roseville.

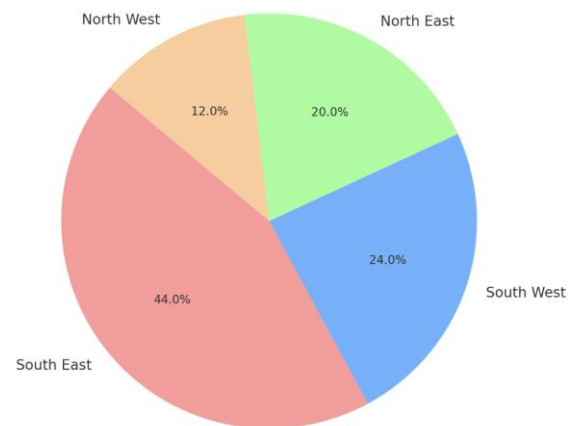


Figure 32 - Travel by Quadrant

This analysis offers a comprehensive understanding of Roseville's urban mobility landscape, highlighting where transit services need to be enhanced and how resources can be optimized to meet peak demand. The findings point to the need for increased frequency and targeted improvements in key corridors, as well as the development of localized services to accommodate intra-quadrant travel.

RECOMMENDATIONS

As Roseville grows and its transit needs evolve, the city's public transportation system must be equipped to meet new challenges while remaining flexible in its approach. The recommendations outlined in this section reflect a comprehensive strategy for enhancing Roseville Transit's operations, improving rider experience, and ensuring the system remains financially sustainable. Through a detailed analysis of ridership patterns, service effectiveness, and public feedback, we have developed a series of targeted recommendations that align with the city's broader goals for mobility and sustainability.

To ensure these recommendations are adaptable to a range of financial scenarios, they have been broken into three categories:

1. **Unconstrained** – Recommendations that envision an ideal transit system without budgetary constraints, focusing on the maximum potential for growth and improvement.
2. **Constrained** – Recommendations made under the assumption of a 10% budget reduction, prioritizing essential improvements while maintaining service quality despite financial limitations.
3. **No Increase** – Recommendations that maintain the current budget, focusing on optimizing the existing system without increasing costs.

Each category offers a distinct approach to improving Roseville Transit's operations, whether through route optimization, service frequency adjustments, or expanded on-demand and commuter services. These recommendations provide the flexibility to adjust the transit system based on available funding while ensuring that the needs of the community continue to be met. In this section, we will outline specific strategies for improving transit services, from optimizing routes and increasing frequency to expanding on-demand options and commuter services. These recommendations are intended to not only address the current gaps in service but also to prepare the system for future demand as Roseville continues to grow.

LOCAL SERVICE

The Local Service will focus on high-frequency, interzonal routes that connect key areas across the city. This service ensures that residents have easy access to mass transit within their neighborhoods and to major destinations such as shopping centers, medical facilities, and downtown Roseville. Buses will run every 30 minutes, offering a reliable and convenient option for day-to-day travel. The goal is to improve connectivity across Roseville, allowing for quick and easy travel between residential zones and major hubs.

Benefits to Riders:

- **Increased Frequency:** Regular buses on most routes every 30 minutes ensure more reliable service for daily trips.
- **Improved Coverage:** Local service will provide access to key destinations, major hubs, and transit centers throughout the city.
- **Seamless Transfers:** Integrated with other services, Local routes allow smooth transitions between zones or service types.

ARROW SERVICE (ON-DEMAND ZONES)

The Arrow Service will replace the city-wide dial-a-ride with three specific on-demand zones designed to offer a flexible and personalized transit experience. Within these zones, riders can travel freely without needing to transfer. For trips that span across different zones, riders will be able to connect to the fixed Local routes. This service focuses on offering flexibility for residents in less densely populated areas or for those requiring specialized transportation options.

Benefits to Riders:

- **Flexibility:** On-demand service offers customized trips within specific zones tailored to individual schedules.
- **Efficiency:** Focused service zones provide faster, more direct service than traditional city-wide dial-a-ride.
- **Improved Connectivity:** Riders have easy access to Local routes for inter-zonal travel, allowing for seamless transitions between on-demand and fixed-route services.

COMMUTER SERVICE

The Commuter Service will be tailored for peak-hour travel, focusing on express routes that connect residential areas to major employment centers. This service will operate during the busiest times of the day, helping commuters get to and from work efficiently, with fewer stops and more direct routes. Designed to reduce travel time and provide a more convenient option for workday commuters, the Commuter Service will address the needs of Roseville's growing workforce.

Benefits to Riders:

- **Time Savings:** Express, direct routes help commuters reach employment hubs faster, particularly during peak hours.
- **Convenience:** Commuter services are designed specifically for the workday, offering routes that minimize congestion and reduce travel time.
- **Enhanced Focus on Employment Centers:** Routes are aligned with major job locations, ensuring that commuters can access key employment hubs efficiently.

GENERAL BENEFITS TO RIDERS ACROSS ALL SERVICES

The integration of Local, Arrow, and Commuter services will create a more robust and accessible transit network for all residents of Roseville. Each service type is designed to meet specific needs, offering a combination of frequency, flexibility, and efficiency.

- **Better Coverage and Frequency:** By combining high-frequency Local routes with flexible on-demand Arrow services and targeted Commuter routes, the transit system will cover more areas and offer more frequent service.
- **Improved Efficiency:** Optimized route planning and on-demand service zoning will ensure a faster, more reliable transit experience.
- **Sustainability and Flexibility:** These services support Roseville's broader sustainability goals by encouraging a shift to public transit, reducing reliance on personal vehicles, and offering flexible options for different types of trips.

IMPLEMENTATION PLAN

The recommendations outlined in this report represent a significant transformation for Roseville Transit. As the city continues to grow and its transit needs evolve, implementing these changes will be crucial for ensuring the system's long-term success. However, given the scale of these changes, careful planning and phased implementation are essential to minimize disruption, maximize resource use, and ensure that improvements align with the city's broader transportation and sustainability goals.

RECOMMENDATIONS CATEGORIZED BY OPERATING SCENARIOS:

With the upcoming expiration of Roseville's current seven-year contract with MV Transit on June 30, 2025, the city will face increased operational costs when the new contract begins on July 1, 2025. These anticipated cost increases will affect non-service-related expenses, which must be incorporated into the service planning and recommendations moving forward. To address these cost challenges while still meeting the transit needs of Roseville's residents, four distinct operating scenarios have been developed, each reflecting a different approach to balancing service levels and operating costs.

1. Preferred Option – The Ideal Operating Scenario for Roseville

The preferred option focuses on maximizing service efficiency, expanding coverage, and improving the overall rider experience while ensuring that the costs associated with the new transit contract are fully integrated into the service framework. This option prioritizes Roseville's long-term vision for its transit system by enhancing service frequency, improving connections between key residential and commercial areas, and utilizing data-driven insights to align services with rider demand. Under this option, additional resources would be allocated toward increasing the availability of Rapid Link, expanding Local services, and improving commuter connections. The goal is to create a flexible, reliable, and accessible network that accommodates Roseville's growth while ensuring financial sustainability through a smart allocation of resources.

2. Unconstrained – The Maximum Potential for Growth and Improvement

The unconstrained option envisions an expansive transit network without budget limitations, allowing for ambitious growth and significant service improvements across all service types.

In this scenario, Roseville Transit would dramatically increase its reach with expanded route frequencies, longer service hours, and enhanced infrastructure to support seamless connections between modes. Investments would be made in high-demand areas, focusing on expanding coverage to underserved communities and upgrading rider amenities, such as real-time tracking and improved accessibility. This approach prioritizes achieving Roseville's transit goals without the need to scale back on the new contract's financial impact, making it a highly aspirational but resource-intensive option.

3. Constrained – A Focus on Maintaining Service Levels Despite Cost Increases

Under the constrained option, Roseville Transit would aim to maintain its current service levels (measured in service hours) despite the increased costs associated with the new contract. This scenario would focus on cost-containment strategies that optimize route efficiency, minimize operational waste, and enhance resource utilization. While this option does not allow for major service expansions, it ensures that riders continue to benefit from the same level of service without substantial disruptions. Some potential adjustments in service delivery, such as streamlining routes or reducing less popular services, may be considered to offset rising operational costs. This approach emphasizes maintaining stability and reliability for riders, even in the face of financial constraints.

4. No Increase – Operating Within the Existing Transit Budget

In the no-increase scenario, Roseville Transit would operate strictly within its current budget, with the cost increases from the new contract absorbed entirely through service reductions. This option would result in a notable reduction in service hours, frequency, or coverage to manage the higher operating expenses. Riders may experience fewer trips or longer wait times, particularly during off-peak hours. The no-increase scenario is the most conservative approach, ensuring that the transit system remains financially sustainable but potentially sacrificing some of the progress and improvements that have been made in recent years. This scenario is designed as a fallback option, prioritizing financial responsibility while minimizing the service impacts as much as possible.

Each scenario reflects a different balance between service quality, cost, and operational efficiency, offering Roseville the flexibility to choose a path that aligns with its financial and community objectives. These options will provide a foundation for future transit planning, allowing Roseville to adapt its services based on real-time needs and changing financial circumstances.

SUMMARY OF RECOMMENDATIONS – PREFERRED SERVICE PLAN

The preferred service plan for Roseville Transit reflects the ideal operating scenario that balances the city’s growing transit needs with the realities of rising operating costs under the new contract. This plan focuses on enhancing service frequency, improving connectivity across the network, and reducing inefficiencies, all while maintaining a commitment to cost-effectiveness. The result is a transit system designed to support Roseville’s growth and evolving transportation demands, ensuring it remains a valuable public resource for current and future riders.

1. Faster, More Frequent Service

- Local routes will operate primarily every 30 minutes (Route 2 will operate every 60 minutes):

Increasing the frequency of local routes is a cornerstone of the preferred plan. By reducing wait times and improving headways, Roseville Transit will offer a more reliable and convenient service that encourages ridership. This is particularly important as the city expands and the demand for timely, efficient transit grows. Route 2, operating every 60 minutes, ensures coverage in areas with lower demand while still maintaining service accessibility.

- Arrow zones will allow for shorter wait times and travel times:

The Arrow on-demand service will be fine-tuned to improve efficiency, reducing wait times for passengers. This flexibility allows Roseville Transit to serve less densely populated areas effectively without the need for fixed routes, making public transportation more accessible to all residents. By optimizing travel times, Arrow zones will ensure passengers can move across the city more quickly.

- More direct service to Downtown Sacramento:

Commuters will benefit from increased direct service to Downtown Sacramento, minimizing the need for transfers and improving travel times. This is a critical improvement for those traveling to the city for work, shopping, or medical appointments, making Roseville Transit a more viable alternative to driving, especially with rising fuel costs and traffic congestion.

2. Better Connections

- Arrow service expanded to the West Park region:

Expanding Arrow's service to the West Park region will allow more residents to take advantage of the flexibility and convenience that on-demand service provides. As new residential developments arise, this expansion ensures that all parts of Roseville remain well-connected to the rest of the city.

- New service on Blue Oaks:

Introducing new services along Blue Oaks addresses the growing transportation needs in this rapidly developing area. This route will serve both residential and commercial zones, providing essential connections to employment, shopping, and recreational destinations.

- Faster service to Downtown, major medical centers, and shopping:

By streamlining routes and optimizing schedules, the preferred service plan ensures faster travel to key destinations, including Downtown, hospitals, and major shopping centers. This improvement directly impacts rider satisfaction, making the transit system more competitive with other modes of transportation.

- New service to Watt/I-80 Light Rail:

By connecting directly to the Watt/I-80 Light Rail station, Roseville Transit will better integrate with the regional transit network. This new service will provide residents with faster, easier access to Sacramento's light rail system, offering a seamless transition for long-distance commuters.

- New service to Richards Blvd Offices:

The addition of service to Richards Blvd ensures that the growing employment hub in the area is well-served, providing employees with convenient, reliable public transit options. This service will help reduce parking demand and traffic congestion in the area, supporting both environmental sustainability and economic development.

- Connections from Granite Bay to Roseville paid for by Placer County Transit:

Coordinating with Placer County Transit to offer connections from Granite Bay into Roseville enhances regional connectivity. These connections will make it easier for residents in surrounding areas to access Roseville's amenities and services, promoting a more integrated transit network.

3. Less Overlap of Services

- Fast local service along major roads:

The plan simplifies local service by focusing on major corridors, ensuring fast and frequent service where the demand is highest. This reduces redundancy and maximizes the efficiency of the transit system, allowing resources to be concentrated on routes that serve the most passengers.

- Shorter routes:

By shortening routes, the system can reduce travel times and improve reliability. Shorter routes also enable better on-time performance, which is critical for both rider satisfaction and operational efficiency.

- Transfers from Arrow throughout the area:

With Arrow providing connections throughout the region, passengers can easily transfer between services, ensuring that all parts of the city are accessible without the need for extensive route overlap. This minimizes duplication of service while enhancing flexibility for riders.

- No more one-way loops – all routes operate bi-directionally:

Transitioning from one-way loops to bi-directional routes ensures that riders can travel in both directions without long detours. This change improves the efficiency of the service and reduces travel times, making the system more user-friendly and responsive to rider needs.

- Service to Sierra College handled by Placer County Transit (PCT) – transfers coordinated between Roseville Transit and PCT:

By coordinating service with Placer County Transit for routes to Sierra College, Roseville Transit can focus resources on other critical areas while ensuring that students and staff still have reliable access to campus. This collaboration reflects a strategic approach to resource sharing and regional coordination.

Why This Plan Reflects the Best Path Forward

The preferred service plan represents the most balanced approach for Roseville Transit as it faces increased costs under the new contract. It prioritizes enhancing service quality while keeping cost-effectiveness at the forefront. By focusing on the most heavily used routes, expanding on-demand services like Arrow to underserved areas, and improving connections to key regional destinations, the plan maximizes the utility of the transit system for current and future riders.

Moreover, the plan's emphasis on reducing service overlap and optimizing route efficiency allows Roseville Transit to manage the anticipated cost increases without compromising on the quality of service. It strikes the right balance between financial responsibility and service expansion, making it the ideal path forward for a growing city like Roseville.

Through this plan, Roseville Transit can continue to serve its community effectively while adapting to new operational realities, ensuring that transit remains a convenient, affordable, and sustainable option for all residents.

The implementation plan provides a roadmap of the **Preferred Option** for how these recommendations will be gradually introduced, prioritizing key initiatives while ensuring the community is fully engaged and informed throughout the process. This plan will take into account not only operational logistics but also financial constraints, workforce needs, and public outreach. The goal is to ensure that the transition to the new transit system is as smooth as possible, with minimal disruptions to existing services while new routes, schedules, and technologies are phased in.

This plan also recognizes the importance of flexibility. As the system changes, it will be important to monitor key performance indicators and adjust the rollout based on real-time feedback and shifting needs. By phasing in these changes over time, Roseville Transit can ensure that resources are used efficiently and that improvements are made in a way that benefits both current and future riders.

PHASE 0 – FEBRUARY/MARCH 2025

PREPARATION AND INITIAL SETUP

Before launching the full implementation of service changes, Phase 0 will focus on critical preparation and foundational steps necessary to ensure the success of subsequent phases. This phase is about setting the groundwork for future changes by addressing key logistical and operational requirements.

Key actions during Phase 0 include:

- **Data Collection and Assessment:** Gathering updated data on current ridership, travel patterns, and system performance to ensure that decision-making is grounded in the latest information.
- **Technology Integration:** Beginning the integration of new technology platforms to support on-demand services and real-time transit information.
- **Staff Training and Resources:** Ensuring that staff are fully trained and equipped to handle new systems, routes, and service models that will be introduced in later phases.

- **Public Engagement and Communication:** Launching targeted public outreach efforts to inform the community of upcoming changes, gather additional feedback, and ensure a smooth transition as new services are rolled out.

Phase 0 is essential for laying the groundwork, ensuring that the necessary infrastructure, resources, and support systems are in place to facilitate a successful implementation of the full transit transformation.

PHASE 1 – APRIL 2025

COMMUTER SERVICES

The redesigned commuter services aim to streamline access to Downtown Sacramento by offering four trips departing from the Taylor Road/Sunsplash Park and Ride and three trips from the Mahany Park and Ride. These routes are optimized for efficiency by focusing on key stops along major streets, including 12th, G, and I streets, before proceeding to 9th Street, where riders can connect to stops at I, K, Capitol, N, O, and P streets.

Based on public feedback, specific trips on the Taylor routes will actually start at the Saugstad Park and Ride and will serve important stops along P Street, 7th, and 5th Streets, looping back via N Street and 7th Street to incorporate the newly developed Richards Blvd Office complex into the route. The Mahany routes will travel via Foothills Blvd to Route 80, maintaining consistent stops with the Taylor route.

This redesigned commuter service focuses on providing more direct and frequent options for suburban commuters, particularly by enhancing access to downtown offices and government centers while integrating the newly developed Richards Blvd area into the route.

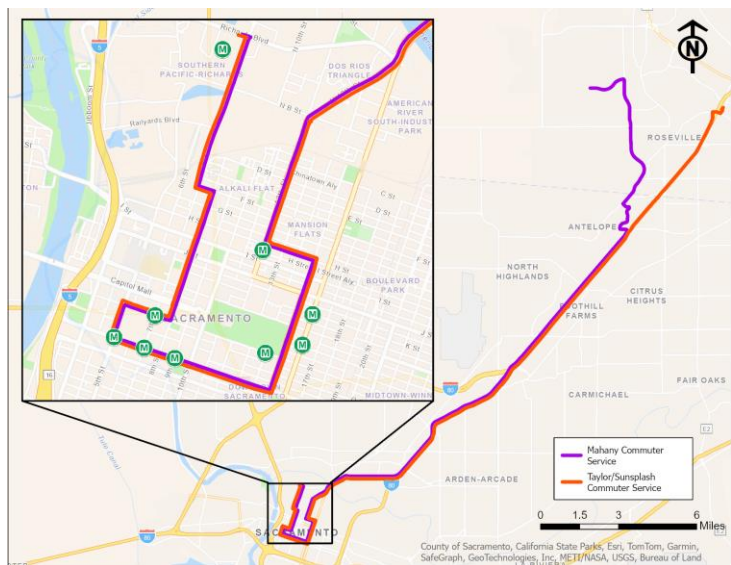


Figure 33 – Phase 1 – Commuter Service Changes

Rapid Link Service Introduction

As part of the overall transformation of Roseville Transit, the Rapid Link Service will play a pivotal role in enhancing the speed and efficiency of the city's transit system. Designed to provide high-frequency, limited-stop routes along key corridors, Rapid Link will serve as an express service connecting major residential areas to employment hubs, shopping centers, and other critical destinations. This service is intended to reduce travel times for commuters and regular transit users, making public transit a more attractive and competitive alternative to personal vehicles.

The Rapid Link service will be strategically introduced during the later phases of the implementation plan, offering a direct, fast, and reliable transit option for residents traveling longer distances. By minimizing stops and optimizing routes along high-demand corridors, this service will significantly improve overall system efficiency while reducing congestion and supporting the city's broader goals for sustainability and mobility.

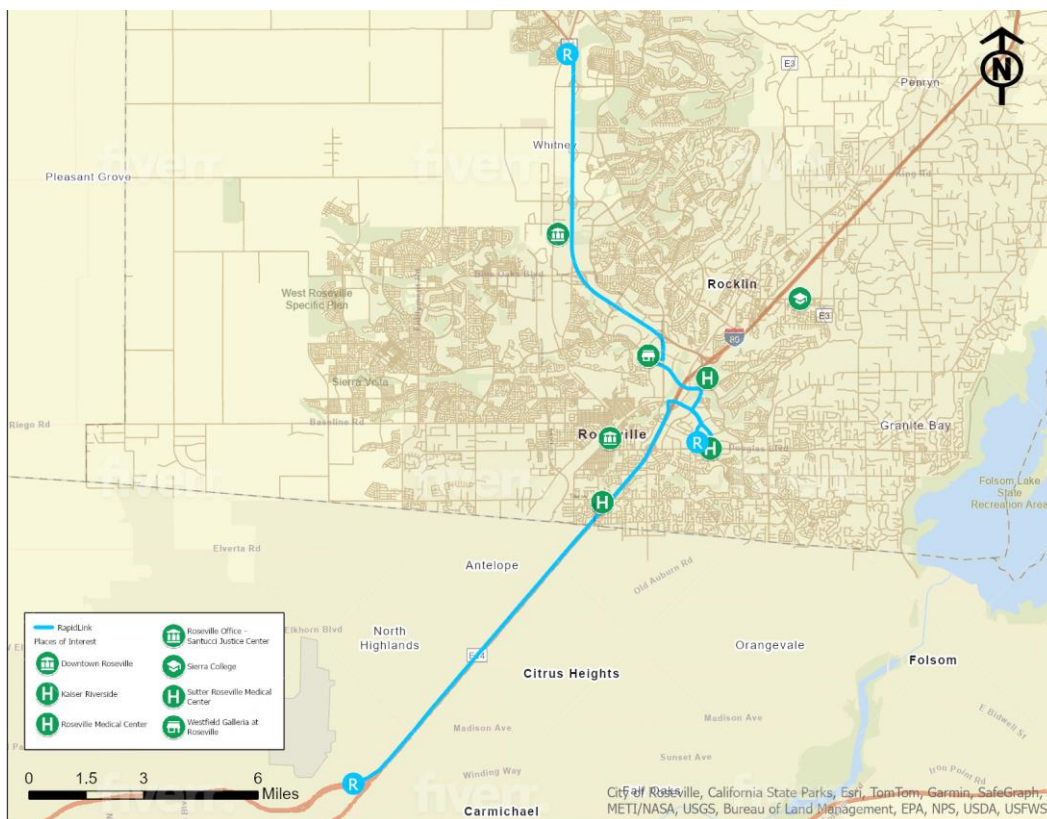


Figure 34 – Phase 1 – Rapid Link Service

Key benefits of the Rapid Link Service include:

- **Reduced Travel Time:** Limited stops along key corridors ensure faster transit times for longer commutes.
- **High Frequency:** Regular, consistent service during peak hours to accommodate high-demand travel periods.
- **Direct Connections:** Linking major residential areas to key employment centers and commercial hubs.

As part of Roseville Transit's larger vision, the Rapid Link Service will contribute to creating a seamless, efficient, and user-friendly public transportation system that meets the city's current and future needs.

PHASE 2 – JULY 2025

Laying the Foundation

Phase 2 of the implementation plan focuses on establishing the foundational elements needed to support the broader changes to Roseville Transit. This phase is essential for ensuring that the system is prepared to handle more significant changes in subsequent phases. By addressing immediate operational needs and introducing targeted improvements early, Roseville Transit will create the infrastructure, data, and service reliability required to support future expansion and enhancements.

Key priorities in Phase 2 include enhancing the reliability and performance of existing services, beginning the deployment of new technology platforms, and starting the integration of public feedback into route planning and scheduling. Additionally, this phase will address the need for immediate operational changes, such as optimizing current routes and launching the first on-demand service zones. By focusing on these foundational elements, Roseville Transit will position itself for success as more comprehensive changes are introduced in later phases.

Phase 2 represents the beginning of a major transition, but it also allows the transit system to implement changes incrementally, ensuring that the system remains flexible, responsive, and efficient as Roseville continues to grow.

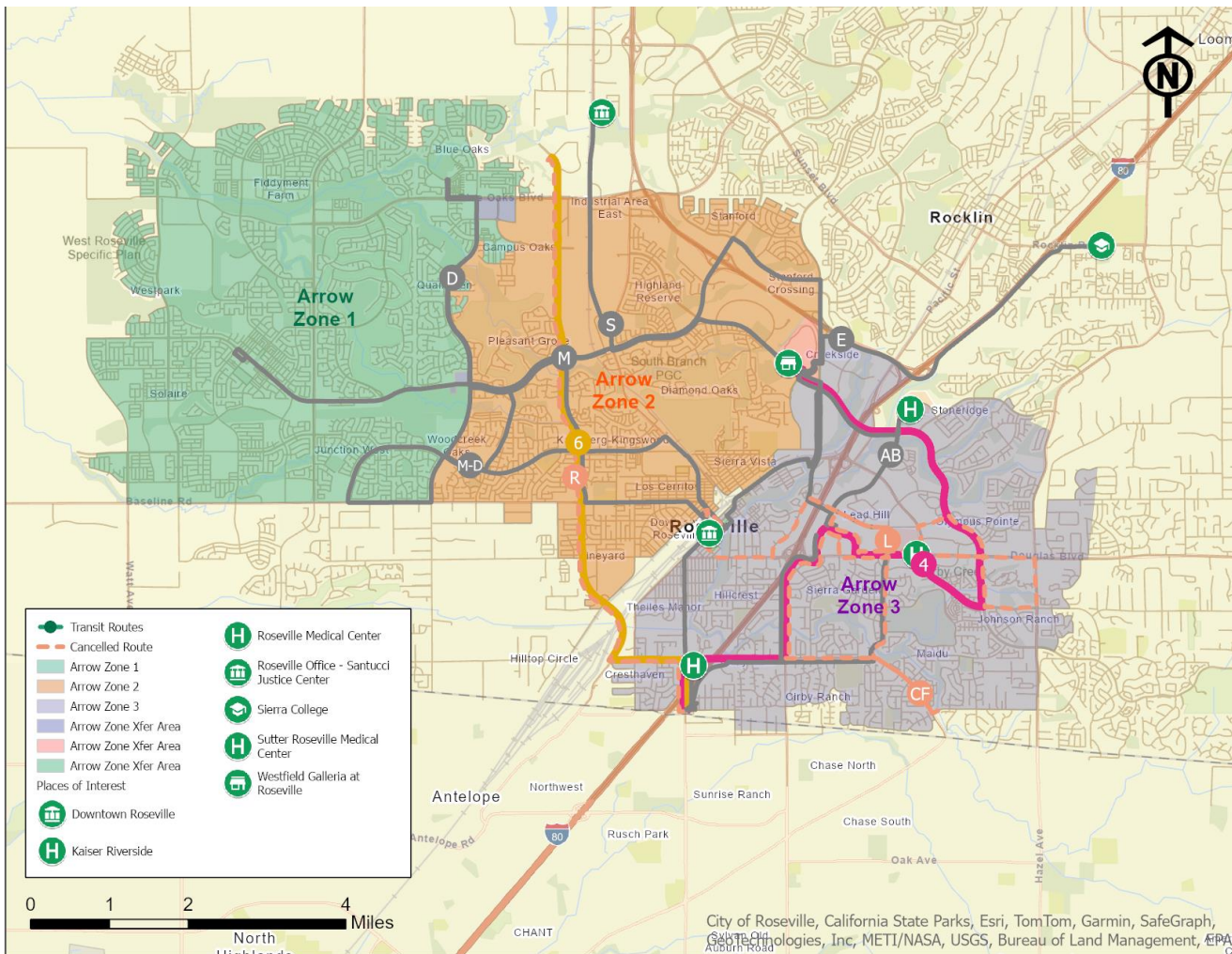


Figure 35 - Phase 2 Service Plan

- Eliminate Routes CF, L, and R
- Introduce Routes 4 and 6
- Implement Arrow Zones

Phase 1 focuses mainly on southeast Roseville, replacing existing routes and introducing new Arrow zones.

- Route C/F has an average daily ridership of 3 boardings.
- Route L has an average daily ridership of 38 boardings
- Route R will be replaced entirely with Route 6 – no changes are expected

ARROW ZONES

The largest change in Phase 2 relates to Roseville Transit's Arrow service. Currently, Arrow operates seven days a week across the entire city. Riders can use the Spare app to book a one-way ride for a single fee across Roseville. While this is a highly convenient service, and ridership has grown since its implementation, the service orientation has resulted in lost ridership on fixed routes and heavy delays on the Arrow service itself. Phase 2 includes the recommendation to break the city into three zones with the following benefits:

- Zone-based Arrow service will allow for shorter travel and wait times as vehicles will be dedicated to each zone and will not travel interzonal (apart from ADA trips).
- Arrow will serve new areas not currently covered by fixed routes, allowing for greater access to more of Roseville.
- Riders wishing to travel outside of the zone can either board a local route or transfer to a local route.

PHASE 3 – JANUARY 2026

Expansion and Enhancement

Phase 3 builds upon the foundation established in Phase 2 by expanding transit services and enhancing the overall system to meet growing demand. This phase focuses on extending service coverage, improving service frequency, and expanding the on-demand zones. By increasing the reach of Roseville Transit, this phase aims to provide more access to transit across the city, ensuring that more residents can rely on public transportation for their daily commutes and activities.

Key initiatives in Phase 3 include increasing the frequency of Local Service to ensure more regular and reliable transportation options for riders, as well as further developing the Arrow Service (on-demand) to meet the needs of residents in less densely populated areas. Commuter services will also be enhanced to provide more direct routes to employment centers, reducing travel times and increasing convenience for those commuting to and from work.

The enhancements in Phase 3 are designed to bring the system closer to its long-term goals, ensuring that Roseville Transit continues to evolve in response to both riders' needs and the city's growth. By strategically expanding service and improving operational efficiency, Roseville Transit will provide a more reliable, user-friendly system that attracts new riders and supports the city's sustainability objectives.

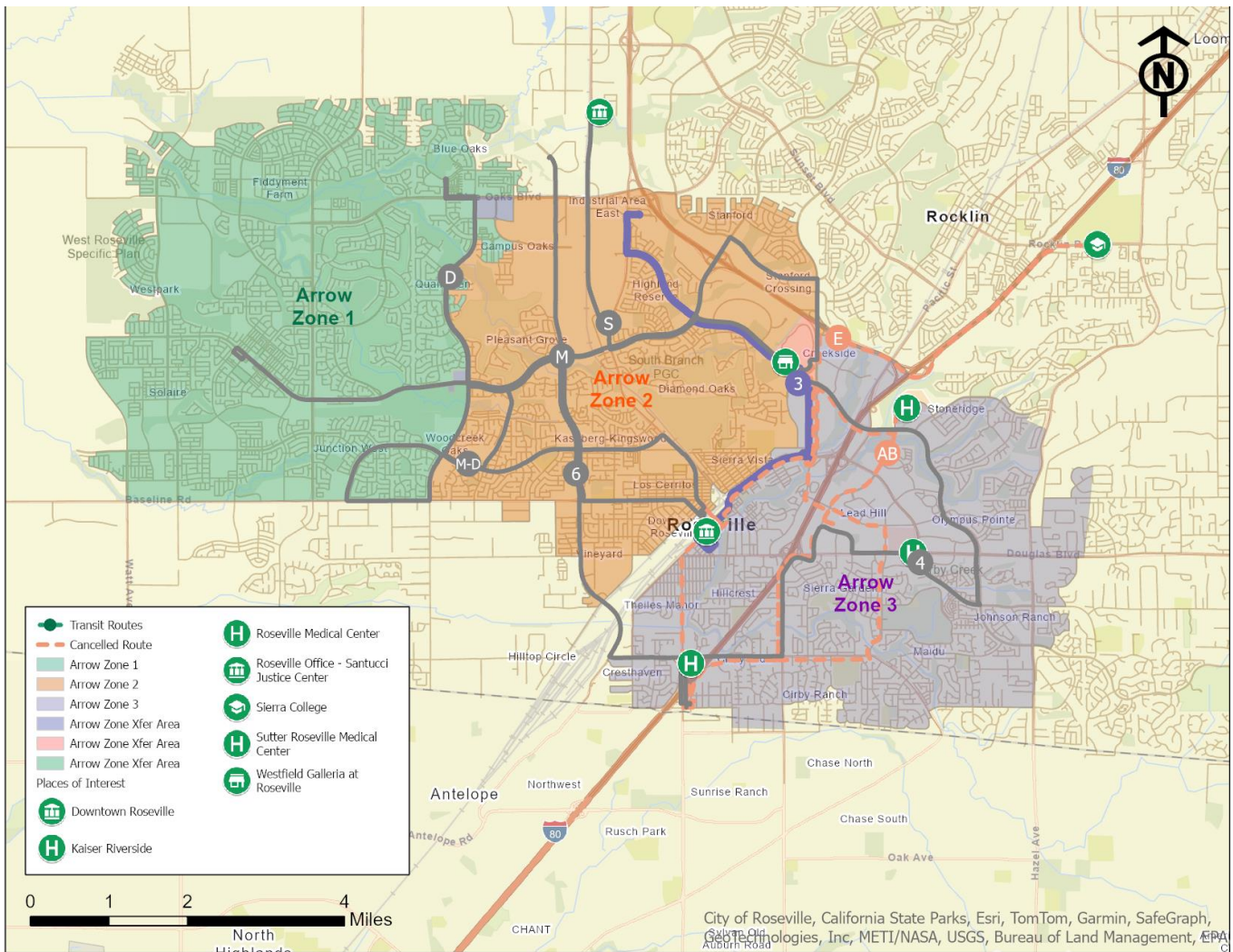


Figure 36 - Phase 3 Service Plan

- Eliminate Route A/B and E
- Introduce Route 3

Phase 2 focuses on introducing new services in central Roseville, specifically in the Highlands Reserve area, to provide connections between the Galleria and Downtown Roseville.

- Route A/B currently carries 238 riders per day, or approximately 56% of Roseville Transit's daily ridership. It is important to ensure that riders on this route are adequately covered, which will occur with a combination of Route 4, Rapid Link, and Arrow.
- Route E currently carries approximately three riders per day but provides service to Sierra College.

PHASE 4 – JULY 2026

Full System Transformation

Phase 4 represents the final stage of Roseville Transit's transformation, focusing on fully integrating all service improvements and reaching long-term performance goals. This phase solidifies the changes made in earlier phases by refining service offerings, expanding system capabilities, and ensuring that Roseville Transit meets the evolving needs of the community.

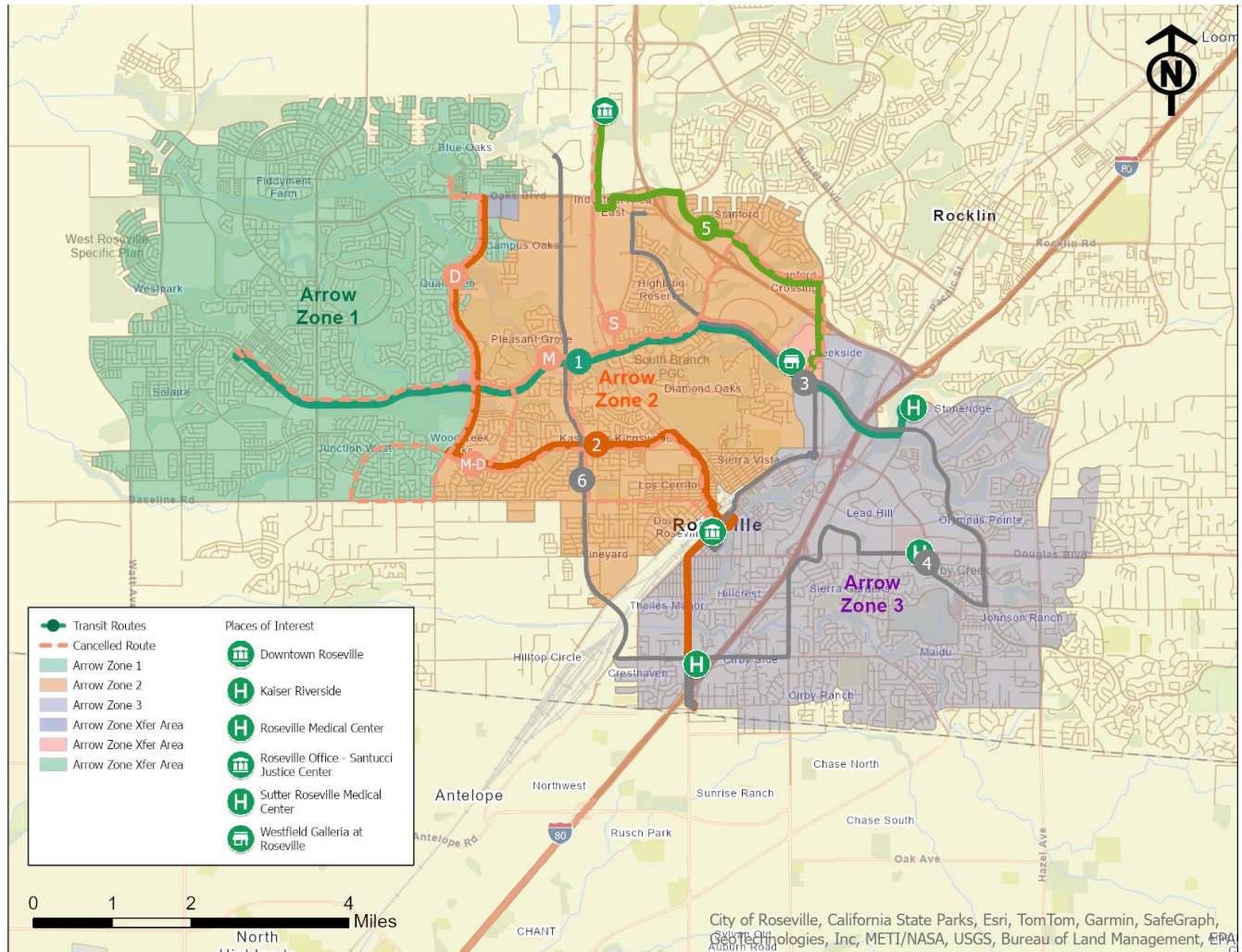


Figure 37 - Phase 4 Service Plan

Key initiatives in Phase 4 include optimizing on-demand services, particularly within Arrow zones, to provide real-time, seamless transportation throughout the city.

Further investments will be made in commuter and local services, focusing on maintaining high levels of service quality, convenience, and reliability. At this stage, the system will be equipped to handle higher volumes of riders while maintaining operational efficiency.

The full implementation of the Service Framework across all transit modes will ensure that Roseville Transit can provide the most efficient, rider-focused system possible. By the end of Phase 3, the transit system will operate at its peak performance, offering a high-quality service that is sustainable, flexible, and responsive to the city's growth and mobility needs.

- Eliminate Routes D, S, and M, and the M deviation
- Introduce Routes 1, 2 and 5

Phase 4 completes the full service plan. The new routes provide service in central Roseville and expand service in the western part of the city.

- Route M carries 73 daily riders, making it the most individually utilized route in the system. It is also the longest, so it will be necessary to ensure Route 1 is fully in place before eliminating this route.
- Route D carries approximately 53 riders per day and provides crucial connections in the growing area of southwestern Roseville.
- Route S currently carries approximately four riders per day and provides connections to the Santucci Justice Center.

FARE RECOMMENDATIONS

The **Transportation 360 Plan** was not originally intended to provide a detailed fare policy or specific projections. However, as part of the **Preferred Service Plan**, we believe that proposing some fare-related recommendations would align with the overall goals and objectives of the plan. These recommendations are designed to enhance the accessibility, financial sustainability, and user experience of Roseville Transit. It is important to note that all of the fare adjustments outlined here are recommendations and not definitive decisions. They are meant to provide guidance and support the successful implementation of the Preferred Service Plan while maintaining flexibility in the final approach.

	Fare	Current Cost	Recommended Fares
Local	Single Ride	\$1.50	\$1.50
	Single Ride Discount	\$0.75	\$0.75
	10-Ride Pass	\$15.00	Eliminated
	30-Day Pass	\$58.00	\$58.00
Commuter	Single Ride - Resident	\$3.25	\$4.00
	Single Ride - Non-Resident	\$4.50	Eliminated
	10-Ride Pass - Resident	\$32.50	Eliminated
	10-Ride Pass - Non-Resident	\$45.00	Eliminated
	30-Ride Pass - Resident	\$110.00	\$135.00
	30-Ride Pass - Non-Resident	\$155.00	Eliminated
Arrow	Single Ride	\$3.75	\$1.50
	Single Ride Discount	\$2.50	\$0.75
	ADA Paratransit	\$2.50	\$2.50
	10-Ride Pass	\$37.50	Eliminated
	10-Ride Pass ADA Paratransit	\$25.00	Eliminated

Figure 38 - Preferred Service Plan Proposed Fare Structure

INTRODUCTION

As part of the **Preferred Service Plan**, Roseville Transit is proposing strategic adjustments to its fare structure. These changes are designed to ensure that the transit system remains both financially sustainable and accessible to all riders. By simplifying fares across Local, Commuter, and Arrow services, the new fare structure aims to enhance rider experience while ensuring the system can meet future service demands. The recommended fare changes reflect current industry standards and align Roseville Transit's services with similar systems across California.

Fare Changes for Local Service

The fare structure for Local service will see minimal changes, ensuring affordability for everyday riders while streamlining fare options for easier administration:

- **Single Ride:** The fare will remain at \$1.50, ensuring that public transit remains an affordable option for local travel. This price point reflects the current ridership demand and operational costs.
- **Single Ride Discount:** The discounted fare of \$0.75, available to seniors, students, and individuals with disabilities, will also remain unchanged. This ensures that vulnerable populations can continue to access transit services at a reduced cost.
- **Elimination of 10-Ride Pass:** The 10-Ride Pass will be eliminated under the Preferred Service Plan. As Roseville Transit modernizes its fare system, the city is reviewing advanced ticketing solutions that will offer more flexibility and convenience for riders. The current 10-Ride Pass has been underutilized, and its removal simplifies the fare structure.
- **30-Day Pass:** The 30-Day Pass, popular with frequent riders, will remain available at \$58.00. This provides a cost-effective option for those who regularly use the transit system, encouraging continued usage of Roseville Transit for daily commutes and errands.

Fare Changes for Commuter Service

The fare structure for Commuter services, which cater to longer-distance riders traveling to employment centers like Downtown Sacramento, will undergo several changes to better reflect the costs associated with providing premium service.

- **Single Ride (Resident):** The fare for resident riders will increase from \$3.25 to \$4.00. This modest increase reflects rising operational costs while keeping the fare competitive with other commuter services in the region.
- **Elimination of Non-Resident Fares:** Fares for non-residents will be eliminated. Currently, non-resident fares account for less than **5%** of total revenue, and their removal simplifies the fare structure while having a minimal financial impact on the system.
- **Elimination of 10-Ride and 30-Ride Passes:** Similar to Local services, the 10-Ride and 30-Ride passes will be phased out. In their place, Roseville Transit is exploring advanced ticketing systems that will offer greater flexibility for frequent riders while streamlining fare collection.

Fare Changes for Arrow (Demand Response) Service

Arrow's fare structure will see significant adjustments to ensure equity and consistency across services. With the introduction of the zone-based system under the Preferred Service Plan, Arrow fares will be aligned with Local service pricing.

- **Single Ride:** The fare for a single ride on Arrow will be reduced from \$3.75 to \$1.50, matching the Local fare. This change promotes parity between Local and Arrow services, making the on-demand service more attractive and accessible to a broader range of riders.
- **Single Ride Discount:** Similarly, the discounted fare will drop from \$2.50 to \$0.75, ensuring that seniors, students, and individuals with disabilities can access Arrow services at an affordable rate.
- **ADA Paratransit:** The fare for ADA paratransit will remain at \$2.50. This ensures that riders who rely on ADA services will continue to receive affordable, reliable transportation options without any increase in costs.
- **Elimination of 10-Ride Passes:** The 10-Ride Pass for Arrow services will also be eliminated as part of the transition to advanced ticketing systems. This aligns with the overall goal of modernizing fare collection and offering more flexible options for riders.

A key recommendation of the Preferred Service Plan is to reduce the cost of Arrow service from \$3.75 to \$1.50, aligning it with Local service fares. This reduction supports the broader goals of accessibility and equity, ensuring that on-demand transit remains a viable option for a wide range of riders, particularly as Roseville Transit transitions to a new zone-based structure for Arrow service.

Shift to Zone-Based Structure

As part of the Preferred Service Plan, Arrow service will no longer operate citywide as a single, continuous on-demand system. Instead, the service will be divided into distinct geographic zones. This transition to a zone-based structure is designed to improve operational efficiency by:

- Reducing travel times within each zone, as vehicles will be able to serve passengers more quickly and directly.
- Minimizing wait times for passengers, as the smaller service areas within each zone will allow for faster response times.
- By focusing on service within defined zones, Roseville Transit can provide faster, more reliable on-demand transit, making it a more attractive option for riders within those zones.

Rider Transfers for Interzonal Travel

While the zone-based structure provides several operational benefits, one key change is that riders who wish to travel outside of their designated zone will need to transfer to Local routes to complete their trips. These interzonal transfers introduce an additional step for passengers making longer journeys. To offset the potential inconvenience of transferring, Roseville Transit is recommending the fare reduction for Arrow service.

By lowering the single ride fare for Arrow to \$1.50, the same as Local service, the transit system ensures that riders are not discouraged by additional transfer requirements or higher costs. This makes the zone-based structure more accessible and affordable, especially for those who rely on Arrow for longer trips or who live in less densely populated areas where on-demand service is essential.

Benefits of Fare Reduction

1. **Equity and Affordability:** By reducing Arrow fares, Roseville Transit ensures that the on-demand service remains affordable and accessible to all riders, particularly lower-income passengers and those who rely on transit for essential travel.
2. **Promoting Ridership:** A lower fare incentivizes more people to use the Arrow service, especially as it transitions to a zone-based model. The reduced cost will make it easier for occasional riders and those making shorter trips to choose transit over other modes of transportation.
3. **Improved Service Experience:** While the zone structure requires some riders to transfer between zones, the benefits of faster, more reliable service within each zone and shorter wait times are expected to improve the overall rider experience. The fare reduction helps balance this new service model by ensuring the cost is not a barrier to transit use.
4. **Consistency Across Services:** Aligning Arrow fares with Local service fares simplifies the fare structure across the system. This consistency makes the system easier to navigate for riders and allows for clearer communication about fares and service changes.

Rationale for Fare Adjustments

The proposed fare changes are driven by several key considerations:

- **Simplification:** By eliminating underutilized fare categories (such as non-resident fares and multi-ride passes), Roseville Transit can streamline its fare structure. This simplifies fare administration and makes the system easier for riders to understand.

- **Alignment with Industry Standards:** The new fare structure aligns with similar systems across California, ensuring that Roseville Transit remains competitive in terms of pricing while offering high-quality service.
- **Equity and Accessibility:** Reducing fares for Arrow services and maintaining low-cost options for ADA riders ensures that the system remains accessible to vulnerable populations. The elimination of non-resident fares also simplifies the system without significantly impacting revenue.

Anticipated Impact on Riders

The fare changes are expected to have minimal negative impact on riders. In fact, the reduction in Arrow fares and the elimination of non-resident charges will make the system more accessible and easier to use. Additionally, riders who previously used multi-ride passes will benefit from the introduction of more modern ticketing systems that offer greater flexibility.

RIDERSHIP PROJECTIONS

Accurately forecasting future ridership is essential for planning a transit system that can meet the evolving needs of a growing city. For Roseville Transit, projecting ridership over the coming years involves a detailed analysis of multiple factors, including population growth, employment trends, and the expected adoption of new services such as the Arrow Service and Rapid Link. By combining these variables with historical ridership data, we can develop a scientific, data-driven model that anticipates future demand and informs service adjustments, resource allocation, and financial planning.

Our ridership projections are designed to reflect both short- and long-term changes, taking into account the gradual recovery from the COVID-19 pandemic, ongoing shifts in work and commuting patterns, and Roseville's continued population and economic expansion. These projections serve as a roadmap for the city to ensure that Roseville Transit is equipped to handle increased demand, enhance service efficiency, and support sustainable growth over the next decade.

In this section, we outline the methodology behind our ridership forecasting and present the projected ridership numbers through Fiscal Year 2035, broken down by service type. These projections will help guide Roseville Transit in its mission to deliver a reliable, efficient, and future-proof transit system that aligns with the city's broader mobility goals.

METHODOLOGY

The ridership projections for Roseville Transit were developed using a rigorous, multi-step approach that integrates demographic trends, economic growth factors, and transit service adoption rates. This scientific method ensures that our projections are not only reflective of current conditions but also responsive to the expected changes in the city's population, workforce, and travel behavior over the next decade.

1. Population Growth Analysis

At the core of our projection model is an analysis of population growth, which serves as a primary driver for increased demand for transit services. Using data from regional and national sources such as the U.S. Census Bureau and local planning agencies, we evaluated the projected population growth for Roseville and surrounding areas.

Roseville is expected to continue growing at a rate of approximately 2% annually, adding thousands of new residents each year, many of whom will rely on public transportation for commuting, errands, and other daily activities.

We also analyzed the distribution of this population growth across different zones in the city, particularly focusing on areas with high-density housing developments and new neighborhoods. This allows us to model ridership increases in a way that aligns with the geographic expansion of the city.

2. Employment Growth and Economic Trends

Economic factors, particularly job growth, play a crucial role in influencing transit ridership. For this analysis, we used employment data from the Bureau of Labor Statistics (BLS) and regional economic development forecasts to determine the rate of job creation in Roseville and the greater Sacramento region. We specifically looked at growth in employment hubs such as downtown Roseville, the expanding Richards Blvd area, and neighboring cities that serve as commuter destinations for Roseville residents.

The model takes into account the shift in work patterns due to the COVID-19 pandemic and the expected long-term adoption of hybrid work models. While some commuters may continue to work remotely part-time, the overall return to work in offices and commercial centers is expected to drive a steady increase in commuter trips.

3. Service Adoption Rates

A key component of our projections is the anticipated adoption of Roseville Transit's new and enhanced services, such as the Arrow Service, Rapid Link, and expanded Commuter Service. We used historical ridership data, along with case studies from similar transit systems that have introduced on-demand and express services, to estimate how quickly riders will adopt these new services.

- **Arrow Service:** As this on-demand service replaces the traditional dial-a-ride, we anticipate a steady increase in usage due to its flexibility and ease of access. Our adoption model suggests a growth curve over the next five years, with ridership reaching approximately 60,000 trips annually by FY 2035.

- **Rapid Link:** Designed to attract riders who prioritize speed and convenience, this express service is expected to capture a significant portion of longer-distance trips and commuters traveling to employment hubs. We estimate ridership on Rapid Link will grow as more residents become aware of its time-saving benefits.
- **Commuter Services:** With improvements to routes and schedules and an emphasis on providing more direct access to employment centers, we expect commuter ridership to grow by approximately 5% per year, in line with job creation rates in key employment areas.

4. Historical Ridership Trends

Our projections are grounded in a detailed analysis of historical ridership data, which provides valuable insights into how Roseville Transit's services have performed in different conditions. The ridership recovery post-COVID has informed our understanding of how quickly transit ridership rebounds following economic or societal disruptions. Using pre-pandemic ridership levels as a baseline, we applied growth factors based on the increased adoption of public transit in growing suburban areas.

We also used this historical data to identify peak travel periods, typical rider demographics, and seasonal variations in transit usage. These patterns allowed us to refine the projection model to reflect real-world conditions rather than relying solely on theoretical assumptions.

5. Simulation and Scenario Testing

To ensure the robustness of our projections, we employed a simulation-based approach using Monte Carlo simulations to account for uncertainties such as economic downturns, fuel price fluctuations, and changes in public policy. These simulations allowed us to model different scenarios and provide a range of projections, ensuring that Roseville Transit is prepared for varying levels of demand.

We also factored in elasticity models, evaluating how ridership may respond to potential fare adjustments, service frequency changes, and the introduction of new technologies like mobile fare payment and real-time bus tracking.

6. Data Validation and Peer Review

Once the initial projections were developed, they underwent a thorough peer review process. Transit experts and planners were consulted to validate the assumptions and ensure the methodology was sound.

We also compared our projections with similar transit systems that have undergone expansions or introduced new service models, ensuring that our ridership growth estimates are in line with industry trends.

RIDERSHIP PROJECTIONS: FY 2026 TO FY 2035

As Roseville Transit embarks on significant system improvements and service expansions, ridership is projected to grow substantially over the next decade. The inclusion of new services like **Rapid Link**, alongside enhancements to existing services such as **Local**, **Arrow**, **Commuter**, and **ADA**, is expected to drive higher adoption rates and support the city's growing population and employment base.

CURRENT RIDERSHIP BASELINE

Currently, Roseville Transit operates at the following ridership levels from FY 2023-2024:

- Local Service: 133,564
- ADA Service: 7,893
- Arrow Service: 24,116
- Commuter Service: 29,039

These numbers provide a baseline for our projections, which factor in population and employment growth, new service adoption, and operational improvements.

PROJECTED RIDERSHIP GROWTH

Service	Current	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035
Local	133,564	137,633	142,037	146,583	150,980	155,510	158,635	160,740	162,232	163,166	163,683
ADA	7,893	8,130	8,211	8,293	8,459	8,544	8,602	8,795	8,916	8,972	9,002
Arrow	24,116	32,557	34,705	36,996	38,476	39,630	40,391	40,903	41,271	41,523	41,607
Rapid Link		75,934	77,832	79,000	79,118	80,147	82,551	84,020	85,894	86,865	88,567
Commuter	29,039	35,718	42,504	50,580	54,627	58,997	62,159	64,291	65,791	66,804	67,534
Total	194,612	289,971	305,290	321,451	331,660	342,827	352,338	358,749	364,104	367,331	370,394

Figure 39 - Projected Ridership

By FY 2035, total ridership is expected to increase from the current baseline of 194,612 trips to 370,394 trips, representing a 90% growth. The key drivers of this growth include the introduction of Rapid Link and the continuous improvements in Local, ADA, Arrow, and Commuter services. The breakdown of projections is as follows:

SERVICE-SPECIFIC PROJECTIONS

- **Local Service:** Local service ridership is projected to grow steadily from 137,633 in FY 2026 to 163,683 by FY 2035. This represents a 22.5% increase from current levels. The increase is driven by improved frequency, more efficient routes, and enhanced coverage across Roseville's expanding residential areas.
- **ADA Service:** ADA ridership is projected to rise modestly, from 8,130 in FY 2026 to 9,002 by FY 2035, an 11.1% increase over the current ridership of 7,893. This reflects an ongoing commitment to providing accessible services and improvements in real-time response for ADA riders.
- **Arrow Service:** Arrow, the on-demand service, is expected to see strong growth, with ridership increasing from 24,116 currently to 41,607 by FY 2035, representing a 72.5% increase. This growth reflects the service's flexibility, ease of use, and appeal to residents in less densely populated areas who prefer on-demand transit options over fixed routes.
- **Rapid Link Service:** Introduced as a stand-alone express service, Rapid Link is projected to become a key player in Roseville's transit network, particularly for longer-distance trips. Starting with 75,934 riders in FY 2026, Rapid Link is expected to grow to 88,567 by FY 2035, a 16.6% increase. This service will cater to residents looking for faster, limited-stop connections between residential and commercial hubs.
- **Commuter Service:** As job growth continues in Roseville and surrounding employment hubs, commuter services are expected to experience significant growth, rising from 29,039 currently to 67,534 by FY 2035—a 132.6% increase. The expansion of direct routes to employment centers and improved peak-hour scheduling will make commuter transit a more attractive option for residents traveling to and from work.

TOTAL SYSTEM RIDERSHIP

Total ridership for Roseville Transit is projected to increase from 289,971 in FY 2026 to 370,394 by FY 2035, reflecting a 27.8% increase over the period. This growth underscores the significant improvements in service quality, coverage, and efficiency that Roseville Transit will achieve through the implementation of new services and the optimization of existing routes.

FACTORS CONTRIBUTING TO GROWTH

- **Population Growth:** As Roseville’s population continues to grow at a steady 2% annually, more residents will rely on public transportation to access work, shopping, and recreational activities. The expansion of residential areas into previously under-served zones will create new demand for Local and Arrow services.
- **Employment Trends:** Job growth in key employment hubs, including Sacramento and the new Richards Blvd area, will drive higher commuter ridership. The increasing number of residents commuting to work outside Roseville will continue to fuel demand for commuter and Rapid Link services.
- **Service Enhancements:** The introduction of Rapid Link, alongside the continued refinement of Local and Arrow services, will attract new riders. The convenience, speed, and flexibility of these services will make transit a more competitive option compared to personal vehicle use.
- **Technology Integration:** The rollout of real-time bus tracking, mobile fare payment, and enhanced on-demand services will improve the overall rider experience, increasing the retention of current riders and attracting new users.

OPERATIONAL HOURS PROJECTIONS: FY 2026 TO FY 2035

Roseville Transit’s projected operational hours reflect the planned expansions in service capacity, designed to meet increasing ridership demand and accommodate the city’s growing population. Key drivers of this growth include the addition of vehicles to both **Arrow** and **Commuter** services, as well as improvements to **Local**, **ADA**, and the newly introduced **Rapid Link** service. Significant jumps in operational hours occur in **FY 2027** and **FY 2032** when new vehicles are deployed to support expanded coverage.

Service	Current	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035
Local	32,533	31,958	32,597	33,249	33,914	34,592	35,284	35,989	36,709	37,443	38,192
ADA	3,588	5,365	5,460	5,558	5,656	5,757	5,860	5,964	6,070	6,178	6,288
Arrow	5,800	9,229	11,706	11,940	12,179	12,422	12,671	15,124	15,427	15,735	16,050
Rapid Link		7,686	7,822	7,962	8,103	9,785	9,959	10,136	10,316	10,500	10,687
Commuter	4,638	5,988	6,748	6,849	6,952	7,056	7,162	7,939	8,058	8,179	8,302
Total	46,559	60,225	64,333	65,557	66,804	69,612	70,935	75,153	76,581	78,036	79,519
Passengers per Hour	4.2	4.8	4.7	4.9	5.0	4.9	5.0	4.8	4.7	4.7	4.7

Figure 40 - Service Hour Projections

By FY 2035, total ridership for the on-demand services is expected to increase from the current baseline of 46,559 trips to 79,519 trips, representing a 71% growth. The key drivers of this growth include the expansion of the Rapid Link service and the steady improvements across Local, ADA, Arrow, and Commuter services. The breakdown of projections is as follows:

SERVICE-SPECIFIC PROJECTIONS

- **Local Service:** Local ridership is projected to increase from 31,958 in FY 2026 to 38,192 by FY 2035, representing an 18% growth. This increase is largely attributed to improved service frequency and enhanced coverage, making transit a more convenient option for local travelers.
- **ADA Service:** ADA ridership is expected to increase from 5,365 in FY 2026 to 6,288 by FY 2035, a 20% growth from current levels. This reflects ongoing efforts to enhance accessibility and maintain responsive, efficient services for ADA-eligible riders.
- **Arrow Service:** Arrow, an increasingly popular on-demand service, is projected to see significant growth, increasing from 9,229 in FY 2026 to 16,050 by FY 2035, representing a 74% increase. The flexibility and convenience of this service are key factors in its growing ridership.
- **Rapid Link Service:** Rapid Link, introduced as a premium on-demand service, is projected to grow from 7,686 riders in FY 2026 to 10,687 by FY 2035, a 39% increase. This service is designed to provide fast, direct connections, particularly for longer trips.
- **Commuter Service:** With the growth of employment opportunities in the region, commuter services are expected to increase from 5,988 riders in FY 2026 to 8,302 by FY 2035, reflecting a 38.7% increase. Improved scheduling and direct routes to employment centers will make commuter services more attractive to working residents.

TOTAL SYSTEM RIDERSHIP

Total ridership for the on-demand and commuter services is projected to increase from 60,225 in FY 2026 to 79,519 by FY 2035, representing a 32% growth over the period. This steady increase in ridership highlights the improvements in both service quality and convenience, especially as passengers per hour rise from 4.2 currently to 4.7 by FY 2035, reflecting higher efficiency and service utilization.

VEHICLE COUNT PROJECTIONS: UNCONSTRAINED SCENARIO

By FY 2035, Roseville Transit's fleet is projected to grow from the current 25 vehicles to 39 vehicles, a 56% increase. This growth is driven by the introduction and expansion of new services like Arrow and Rapid Link, as well as the increased demand for ADA and Commuter services. The fleet projections reflect a careful balance between meeting increased demand and maintaining cost efficiency, with each service category seeing tailored growth based on ridership trends and operational needs.

Service	Current	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035
Local	15	13	13	13	13	13	13	14	14	14	14
ADA	2	3	3	3	3	3	3	3	3	3	4
Arrow	2	5	6	6	6	6	6	7	7	7	7
Rapid Link		5	5	5	5	5	5	6	6	6	5
Commuter	6	7	8	8	8	8	8	9	9	9	9
Total	25	33	35	35	35	35	35	39	39	39	39

Figure 41 - Fleet Count Projection

Local Service:

- **Fleet Count:** The fleet dedicated to local services will stabilize at 14 vehicles by FY 2032, with a slight reduction in earlier years due to efficiency improvements.
- **Annual Hours:** Local service annual hours are projected to remain consistent, though slight growth is expected to accommodate improved frequency. By FY 2035, with 38,192 passengers annually, the fleet of 14 vehicles will be optimized to handle this demand with a balance between vehicle availability and operational costs.
- **Passengers per Hour:** Local service is projected to increase in efficiency, reaching 4.7 passengers per hour by FY 2035. This reflects the expected optimization of routes and the operational efficiency of the fleet.

ADA Service:

- **Fleet Count:** The ADA fleet will grow from 2 vehicles currently to 4 vehicles by FY 2035, responding to a steady increase in demand for accessible transit options.
- **Annual Hours:** ADA services will see a corresponding rise in annual hours, which is necessary to support the increase in ADA ridership. The growth in the number of vehicles will ensure there is sufficient capacity to meet this demand.

- **Passengers per Hour:** Although ADA services operate at lower efficiency due to the nature of demand, ADA passengers per hour will still grow modestly to 1.5 by FY 2035, as annual hours increase proportionally with fleet size.

Arrow Service:

- **Fleet Count:** Arrow's fleet will expand significantly, growing to 7 vehicles by FY 2035 as on-demand services gain popularity.
- **Annual Hours:** The rise in annual hours for Arrow is aligned with its growing fleet size, ensuring more coverage for its flexible, demand-based routes. The projected 16,050 annual passengers in FY 2035 will be supported by a robust fleet and longer service hours.
- **Passengers per Hour:** Arrow service will reach 3.2 passengers per hour by FY 2035, indicating efficiency improvements that come with optimized vehicle deployment and expanded coverage.

Rapid Link Service:

- **Fleet Count:** The Rapid Link service will stabilize at five vehicles by FY 2035, with an increase to 6 vehicles between FY 2032 and FY 2034 to meet peak demand.
- **Annual Hours:** Rapid Link's hours will increase as more vehicles become available, providing faster, direct service across key corridors. The focus on efficiency will allow these vehicles to serve high-demand routes with reduced travel times.
- **Passengers per Hour:** Rapid Link service is projected to reach 3.0 passengers per hour by FY 2035, reflecting a stable balance between ridership growth and operational improvements.

Commuter Service:

- **Fleet Count:** The commuter fleet will grow to 9 vehicles by FY 2033 and maintain that level through FY 2035.
- **Annual Hours:** Commuter services will see a significant increase in annual hours, particularly during peak commute times. This increase is essential to accommodate a growing workforce commuting to employment hubs outside Roseville.
- **Passengers per Hour:** Commuter services will achieve 6.5 passengers per hour by FY 2035, reflecting the highest efficiency among all service types. This is a result of targeted scheduling and route planning during peak demand periods.

Total System Efficiency:

- **Fleet and Annual Hours Correlation:** The total fleet count will rise from 25 vehicles currently to 39 by FY 2035, aligning with an increase in annual service hours across all services. This growth supports the projected ridership demand while ensuring efficient use of each vehicle, as evidenced by the rising passengers per hour metric.
- **System-wide Passengers per Hour:** By FY 2035, the entire system is expected to achieve an average of 4.7 passengers per hour, indicating a steady improvement in service efficiency as the fleet expands and operational hours increase.

FLEET REPLACEMENT – ELECTRIFICATION/RIGHT-SIZING

The City of Roseville operates a diverse fleet to meet the needs of its transit services, which include Local, Commuter, and Dial-A-Ride (DAR) services (which encompass Arrow and ADA services). Each service type has distinct vehicle requirements based on ridership demand, service hours, and route characteristics. A comprehensive fleet replacement strategy ensures that Roseville can continue to meet transit needs efficiently while adhering to the FTA's vehicle replacement guidelines.



Below is an analysis of the vehicle types currently in use for each service, including vehicle length, average age, and the projected replacement year.

Vehicle Types by Service

Commuter Service (COM)

- **Vehicle Type:** Primarily consists of large 40-foot buses.
- **Average Age:** 16 years
- **Replacement Year** (on average): 2021

These vehicles serve high-demand, peak-hour routes, often requiring a larger capacity to handle commuter traffic to employment hubs.

Dial-A-Ride (DAR) (Arrow and ADA Services)

- **Vehicle Type:** Smaller 26-foot cutaway vehicles designed for flexible, on-demand services.
- **Average Age:** 8.75 years
- **Replacement Year (on average):** 2020

DAR services require smaller vehicles for efficient operation in less densely populated areas with variable demand patterns.

Local Service

- **Vehicle Type:** A mix of 34.25-foot buses offering flexibility across routes with medium to high demand.
- **Average Age:** 8.06 years
- **Replacement Year (on average):** 2023

Local service vehicles need to balance capacity with maneuverability, ensuring they can handle both busy and quieter routes effectively.

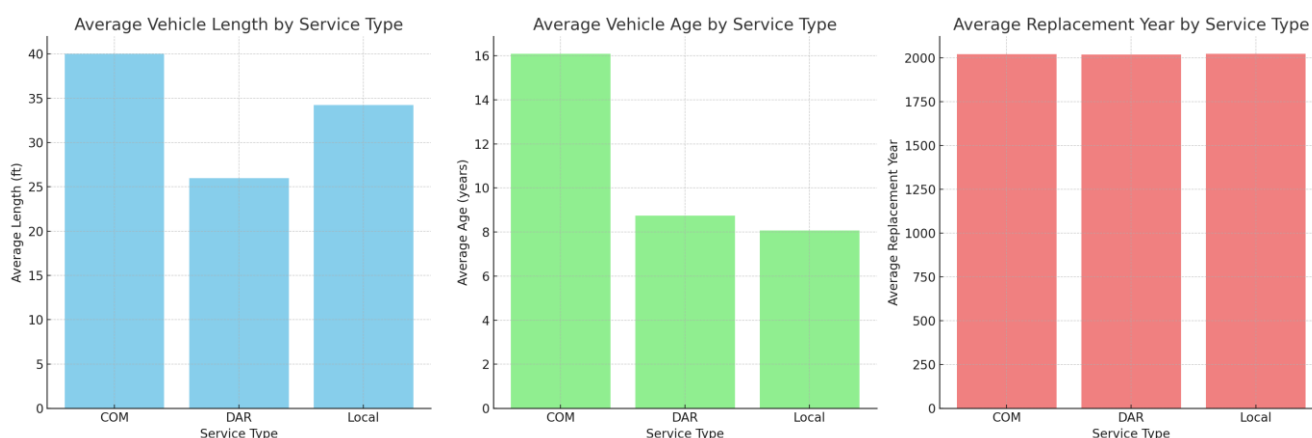


Figure 42 - Existing Fleet Census

OVERVIEW OF CALIFORNIA'S BUS REPLACEMENT POLICY

California has established stringent policies for bus replacement to promote environmental sustainability, improve public health, and ensure the transit fleet's operational efficiency. The state's transit agencies, including the City of Roseville, must adhere to these regulations when planning fleet replacements. Below is an overview of key policies that affect bus replacement planning in California:

1. California Air Resources Board (CARB) – Innovative Clean Transit (ICT) Regulation

- **Zero-Emission Bus Mandate:** CARB’s ICT regulation mandates that transit agencies gradually transition to 100% zero-emission bus (ZEB) fleets by 2040. The ICT requires that all new bus purchases must be zero-emission buses starting in 2029, and agencies must demonstrate progress toward this goal by purchasing a set percentage of ZEBs earlier, depending on the size of the agency.
- **For Large Agencies:** Starting in 2023, 25% of new bus purchases must be ZEBs, increasing to 50% by 2026.
- **For Small Agencies (like Roseville):** Beginning in 2026, 25% of new purchases must be ZEBs, increasing incrementally until the 100% target by 2040.
- **Fleet Composition:** The City of Roseville’s future bus purchases will need to reflect this transition toward electric or hydrogen-powered vehicles. While some services like DAR may already be suitable for smaller electric vehicles, the larger buses used in Commuter services will also need to comply with this policy by their mandated purchase dates.

2. Federal Transit Administration (FTA) Guidelines on Vehicle Useful Life

- **Useful Life Standards:** While California’s push for zero-emission buses (ZEBs) is a driving force for bus replacement decisions, Roseville must also adhere to FTA guidelines on vehicle useful life, which requires buses to be replaced after 12 years of service or after reaching 500,000 miles for heavy-duty buses.
- **ZEB Funding Support:** The FTA and California provide various funding sources, including grants, to assist transit agencies in transitioning to zero-emission fleets. These programs, such as the Low or No Emission Vehicle Program (Low-No Program), provide financial incentives for purchasing electric buses and the infrastructure needed to support them.

3. Senate Bill (SB) 350 – Sustainable Freight Action Plan

- **Greenhouse Gas Reduction Targets:** SB 350 aims to reduce greenhouse gas emissions and improve air quality by transitioning the state’s public and freight transportation sectors to cleaner energy sources. This aligns with the CARB’s ICT regulation and provides a broader framework for integrating electric vehicles into public transit systems to meet California’s ambitious climate goals.

4. Funding Opportunities and Incentives

- **Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP):** The HVIP provides funding to reduce the cost of purchasing zero-emission or hybrid buses. Transit agencies can use this program to reduce the upfront costs of ZEBs, helping to ease the financial burden of compliance with CARB's regulations.
- **Low Carbon Transit Operations Program (LCTOP):** This program provides funds to support zero-emission transit projects, such as the purchase of electric buses and the installation of related infrastructure like charging stations. Transit agencies in California, including Roseville, can apply for these funds to offset the costs of replacing existing buses with zero-emission alternatives.

Key Takeaways for Roseville's Fleet Replacement Plan

- **Transition to Zero-Emission Buses:** Roseville must begin planning to integrate ZEBs into its fleet, starting with a minimum of 25% of new purchases by 2026. Given the projected replacement year of some vehicles, Roseville has the opportunity to begin this transition with its next round of fleet replacements, particularly for its DAR and Local services.
- **Vehicle Size and ZEB Suitability:** California's policies encourage the adoption of smaller, more fuel-efficient, or zero-emission buses where possible. Roseville can take advantage of this policy shift by right-sizing its fleet and adopting smaller electric vehicles for services like DAR, which have lower ridership.
- **Financial Planning and Funding Opportunities:** California offers numerous financial incentives for transit agencies transitioning to ZEBs, reducing the overall costs of compliance. The City of Roseville should actively pursue state and federal funding to support its fleet replacement efforts while adhering to both CARB and FTA regulations.

By aligning with these policies, Roseville Transit can contribute to California's long-term sustainability goals while modernizing its fleet to better serve its community.

RIGHT-SIZING THE FLEET

Given Roseville's current ridership levels and service productivity, particularly for Local and Dial-A-Ride (DAR) services, there is a clear need to right-size the fleet to match actual demand while aligning with California's requirements for fleet electrification. The goal of rightsizing is to reduce operating costs, improve service efficiency, and support the city's environmental objectives by transitioning to smaller, more efficient electric buses where appropriate. Below is an overview of how Roseville Transit should approach the right sizing, with examples of suitable smaller electric buses.

Local Service: Opportunities for Rightsizing

- **Current Fleet Usage:** The current fleet serving Local routes in Roseville consists of medium-sized buses (approximately 34 feet), which may be oversized for the current demand levels. Local services operate at an average of **4.7 passengers per hour**, a metric that suggests smaller vehicles could be used without compromising service quality.
- **Recommendation:** Transition to electric buses in the 25-30 foot range for most Local routes where lower ridership is expected. These smaller buses are more agile for navigating residential and commercial areas, and they align well with the city's goal of transitioning to zero-emission vehicles.

Examples:

BYD K7M (30-foot Electric Bus):



- **Cost:** Approximately \$450,000 - \$500,000
- **Seating Capacity:** 22-30 passengers
- **Range:** 150-200 miles per charge
- **Useful Life:** 12 years (aligned with FTA guidelines for transit vehicles)
- **Advantages:** Fully electric, compact size for urban routes, low operating costs, and grant eligibility through California's ZEB initiatives.

Proterra ZX5 (35-foot Electric Bus):



- **Cost:** Approximately \$700,000 - \$800,000
- **Seating Capacity:** Up to 40 passengers
- **Range:** 250 miles per charge
- **Useful Life:** 12 years
- **Advantages:** More suited for higher-capacity Local routes, fully electric with extensive range, and used in many California transit systems.

Dial-A-Ride (DAR): Right-Sizing for On-Demand Services

- **Current Fleet Usage:** DAR services, including Arrow and ADA, utilize smaller cutaway buses (~26 feet) that are more appropriate for the lower ridership levels and flexible nature of on-demand transit. However, the move toward electrification presents an opportunity to replace these vehicles with even more efficient electric models.
- **Recommendation:** Replace existing DAR vehicles with compact electric cutaway buses or electric vans designed for flexible, low-capacity services.

Examples:

Lightning eMotors Transit Van (Electric Van for DAR):



- **Cost:** Approximately \$100,000 - \$150,000
- **Seating Capacity:** 10-12 passengers
- **Range:** 120-150 miles per charge
- **Useful Life:** 8-10 years
- **Advantages:** Perfect for low-capacity DAR services, easy to deploy in smaller areas, lower upfront cost, and highly efficient for short trips.

Micro Bird G5 Electric (Electric Cutaway Bus):



- **Cost:** Approximately \$250,000 - \$300,000
- **Seating Capacity:** 16-20 passengers
- **Range:** 100-125 miles per charge
- **Useful Life:** 8-10 years
- **Advantages:** Ideal for DAR services with lower mileage requirements, fully electric with adequate range for a day's service, and eligible for federal and state grants.

Commuter Service: Maintaining Larger Vehicles for Comfort

Fleet Requirements: While the local and DAR services are ideal candidates for right-sizing, the commuter fleet must retain high-floor, larger buses (40 feet) to meet rider expectations for comfort and capacity. These buses typically handle longer trips with more passengers, and they need to offer amenities like spacious seating, luggage storage, and Wi-Fi for commuter comfort.

Electrification for Commuter Fleet:

Recommendation: As Roseville transitions to electrification, it should explore fully electric, high-floor buses that maintain the 40-seat requirement while offering improved environmental benefits.

Examples:

New Flyer Xcelsior CHARGE (40-foot Electric Bus):



- **Cost:** Approximately \$900,000 - \$1 million
- **Seating Capacity:** Up to 40 passengers
- **Range:** 200 miles per charge
- **Useful Life:** 12 years
- **Advantages:** Suitable for long-distance commuter routes, fully electric, meets California's ZEB regulations, and ensures high comfort levels for passengers.

Advantages of Right-Sizing

- **Cost Savings:** Smaller vehicles cost less to purchase, maintain, and operate. Right-sizing the fleet can result in significant operational savings, particularly for routes with lower ridership.
- **Efficiency:** Electric buses offer lower fuel and maintenance costs, and smaller buses can better match demand levels, avoiding the expense of running larger, underutilized vehicles.
- **Environmental Benefits:** Transitioning to smaller electric buses reduces the city's carbon footprint, helping to meet California's ambitious climate goals while offering quieter, cleaner transit services.

- **Funding and Grants:** Right-sizing, particularly when transitioning to electric vehicles, opens up additional funding opportunities through state and federal grants, including the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP) and Low or No Emission Vehicle Program (Low-No Program).

Charging Infrastructure and Electrification Strategy

As Roseville transitions to a fully electric bus fleet, the implementation of an adequate and scalable charging infrastructure becomes a critical component of the system's success. With the installation of overhead charging infrastructure at the Galleria for the Rapid Link service, Roseville has made significant strides, but there are several factors and decisions to consider as they continue expanding their electric fleet across Local, Dial-A-Ride (DAR), and Commuter services.

1. Existing Charging Infrastructure and Compatibility

Overhead Charging at the Galleria:

The current installation of overhead charging for the Rapid Link service provides an efficient solution for this fully electric, fast-transit service. Overhead charging systems, also known as “pantograph” chargers, are particularly well-suited for high-capacity, fast-transit buses that make frequent stops at dedicated charging points.



Can Other Buses Use Overhead Charging?

- **Yes**, other electric buses with the appropriate configuration (especially larger buses like those used in Local and Commuter services) can leverage overhead charging. Smaller buses, such as those used in DAR services, may not be compatible unless they are equipped for this type of system. Roseville should consider the flexibility and standardization of charging interfaces when procuring new vehicles.
- **Opportunities for Other Routes:** Buses on Local routes that pulse out of the Galleria could potentially use this infrastructure, maximizing its utilization and ensuring that buses can stay in service longer before needing to return to the depot for charging.

2. Charging Time and Range Considerations

- **Charging Time:** The charging time for electric buses depends on the type of charger and the bus model:
- **Pantograph Chargers** (like those at the Galleria for Rapid Link): These chargers typically provide a fast charge in **10-20 minutes** for high-capacity buses, allowing them to top up between trips.
- **Depot Chargers:** Standard chargers at the depot (50-150 kW) can take **3-5 hours** to fully charge a bus. Faster depot chargers (up to 450 kW) may reduce this time to **1-2 hours**.

Bus Range:

- **Smaller electric buses** (e.g., 25-30 ft, used for DAR or lower-demand local services) typically range from **100-150 miles** per full charge.
- **Larger electric buses** (e.g., 35-40 ft, used for local or commuter services) generally range from **150-250 miles** per charge, depending on the terrain, weather, and passenger load.
- **Rapid Link Buses:** These larger electric buses will likely fall into the 200-250 mile range, making them ideal for fast-charging solutions.

3. Infrastructure Expansion Recommendations

Depot Charging:

As Roseville expands its electric fleet across Local, DAR, and Commuter services, it will need to invest in additional charging infrastructure at the depot. Depot charging offers overnight or mid-day charging when buses are out of service.

Recommendation: Install both standard and high-capacity depot chargers to accommodate the range of electric buses in the fleet. Larger buses may require faster chargers, while smaller DAR buses can use slower, less expensive chargers overnight.



Charging Hubs at Key Locations:

- **Galleria and Downtown Roseville:** Since buses will pulse primarily out of these two hubs, Roseville should explore installing additional charging stations at Downtown Roseville, particularly if Local or Commuter buses will use these points.

- **On-Route Charging:** Roseville may also explore adding in-route charging stations on high-frequency routes to minimize downtime and ensure continuous operation. This is particularly useful for long-range services like Commuter routes or high-demand Local routes.



4. Operational Considerations for Charging

Mid-Trip Reliefs and Scheduling Adjustments:

For electric buses, it's essential to integrate charging windows into the scheduling framework. Roseville may consider scheduling **mid-trip reliefs** for buses, where a bus can be swapped out for charging, and another bus is brought in as a replacement to maintain service continuity.

- **Rapid Link:** Given the fast-charging infrastructure already in place, buses can remain in service with brief charging stops between trips.
- **Local and DAR Buses:** These may require longer charging breaks, but mid-trip reliefs or shift changes can be scheduled during natural breaks in service, such as driver changes or non-peak periods.

Bus Range and Daily Service Planning:

To ensure that buses have sufficient charge for daily service, Roseville should factor in the range of each bus and the mileage required for each route. Buses with shorter ranges should be assigned to routes with lower mileage requirements or scheduled to pulse back to charging points more frequently.

Additional Spare Buses:

Given the additional time needed for charging, it's advisable to maintain a slightly larger fleet of spare buses (particularly for Local and DAR services). This will allow for more flexibility when scheduling mid-day charging or when buses need to be taken out of service for charging.

Recommendation: Increase the spare bus ratio by approximately 10-15% to ensure that there are always enough buses available to meet service demand while others are charging.

5. Long-Term Expansion and Futureproofing

Scalability: As Roseville expands its fleet, both Local and DAR services should have scalable charging solutions. Investing in modular charging systems at depots and key hubs will allow for future growth without requiring a complete overhaul of the infrastructure.

Energy Management: With an increase in the number of electric buses, energy management becomes critical. Roseville should work with its energy provider to install smart energy management systems that optimize charging schedules based on energy demand and costs, potentially utilizing off-peak electricity rates to minimize operating expenses.

Renewable Energy Integration: As part of a long-term strategy, Roseville could explore integrating solar panels or energy storage solutions at depots or charging hubs to reduce reliance on the grid and support sustainability goals.

Key Considerations for Roseville's Charging Strategy

- **Maximizing Utilization of the Galleria Charging Infrastructure:** Expand usage of the overhead charging stations at the Galleria to include Local and Commuter buses that are compatible with pantograph chargers.
- **Depot Charging Needs:** Install high-capacity depot chargers to ensure buses can be charged overnight or during non-service hours.
- **Scheduling Adjustments for Charging:** Incorporate mid-trip reliefs or scheduled downtime into daily operations to ensure buses can be charged without interrupting service.
- **Spare Bus Allocation:** Increase the number of spare buses to maintain operational efficiency while allowing others to charge.
- **Future-Proofing:** Plan for scalable infrastructure and energy management solutions to accommodate future growth in the electric fleet.

PRICING AND COST PROJECTIONS: FY 2026 TO FY 2035

In planning for the next decade, Roseville Transit must account for projected operational costs under four distinct financial scenarios: **Preferred**, **Unconstrained**, **Constrained**, and **No Increase**. These scenarios provide flexibility depending on available budget, ridership demand, and service expansion plans.

The projected costs are calculated based on the operational hours required to meet the growing demand, combined with the fixed and variable cost structure used in our detailed cost allocation model. Notably, the Rapid Link service, which is currently funded through a grant, will cost approximately **\$1.5 million per year** to operate once the grant expires. If Roseville Transit continues with the service after the grant period, these costs must be incorporated into the overall budget.

It is important to note that the years in the table are labeled “Year 1,” “Year 2,” and so on, representing phases of full operation rather than being tied to specific fiscal years. This ensures flexibility in the phased implementation of the plan.

A critical factor impacting these projections is the upcoming 2025 transit contract, which includes a projected 17% cost increase. This increase reflects adjustments for labor, fuel, maintenance, and other operational expenses under the new contract. The estimated costs for each scenario are outlined below. A critical factor impacting these projections is the upcoming 2025 transit contract, which includes a projected **17% cost increase**. This increase reflects adjustments for labor, fuel, maintenance, and other operational expenses under the new contract. The estimated costs for each scenario are outlined below.

Scenario	Current	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Unconstrained		\$8,603,455	\$9,190,324	\$9,365,137	\$9,543,298	\$9,944,443	\$10,133,407	\$11,004,382	\$11,213,471	\$11,426,562	\$11,643,732
Constrained		\$6,997,400	\$7,474,715	\$7,616,894	\$7,761,797	\$8,088,058	\$8,241,747	\$8,950,132	\$9,120,189	\$9,293,501	\$9,470,131
No Increase		\$6,268,528	\$6,696,125	\$6,823,494	\$6,953,304	\$7,245,580	\$7,383,260	\$8,017,858	\$8,170,201	\$8,325,461	\$8,483,692
Preferred		\$7,110,568	\$7,595,602	\$7,740,081	\$7,887,328	\$8,218,865	\$8,375,040	\$9,094,882	\$9,267,689	\$9,443,804	\$9,623,291
Rapid Link Costs		\$1,520,000	\$1,623,684	\$1,654,569	\$1,686,045	\$1,756,917	\$1,790,302	\$1,896,760	\$1,932,800	\$1,969,529	\$2,006,961
Current Costs	\$5,679,832	\$6,557,626	\$7,004,942	\$7,138,186	\$7,273,982	\$7,579,738	\$7,723,768	\$8,387,633	\$8,547,002	\$8,709,421	\$8,874,950
Fixed Costs	\$802,778	\$830,875	\$859,956	\$890,054	\$921,206	\$953,448	\$986,819	\$1,021,358	\$1,057,105	\$1,094,104	\$1,132,398

Figure 43 - Cost Projections by Service Plan

Cost Allocation Methodology

The projected costs for each scenario are calculated using a combination of fixed and variable costs. Fixed costs include expenses that remain constant regardless of the level of service (e.g., administrative overhead, facility expenses), while variable costs fluctuate based on the number of service hours (e.g., driver wages, fuel, vehicle maintenance). By isolating fixed and variable components, we can more accurately forecast how changes in service levels and operational hours affect total costs.

- **Fixed Costs:** Starting at **\$802,778** currently, fixed costs are projected to grow incrementally to **\$1,132,398** by Year 10. These costs include operational infrastructure, management, and administrative expenses that remain stable regardless of service changes.
- **Variable Costs:** Increase significantly based on the service scenario chosen, with the greatest variability in operational hours driving differences between the unconstrained, constrained, and no increase scenarios.

Scenario-Specific Cost Projections

1. Preferred Scenario

The **Preferred Scenario** represents the ideal balance of service expansion, cost-efficiency, and ridership demand. This scenario focuses on maximizing transit efficiency and service improvements while operating within a realistic, sustainable budget. The Preferred Scenario includes the introduction of **Rapid Link**, the expansion of **Arrow** and **Commuter** services, and more frequent Local service operations.

- Year 1 Cost: \$7,110,568
- Year 5 Cost: \$8,218,865
- Year 10 Cost: \$9,633,291

In the Preferred Scenario, Roseville Transit optimizes its routes and service schedules to ensure growth while adhering to financial constraints. The expansion is paced appropriately, ensuring new services like Rapid Link and enhanced Local service can operate efficiently within budget.

Cost Reduction Options for the Preferred Service Plan

While the **Preferred Service Plan** presents the ideal balance of service expansion, operational efficiency, and ridership growth, it is recognized that the plan comes with higher costs. Roseville Transit has worked to provide a comprehensive and enhanced service to meet the growing needs of the community, but in response to budget concerns, a set of cost-reduction options has been identified to make the Preferred Service Plan more affordable.

Additionally, Roseville Transit is forecasting a **17% increase** in annual contract expenses starting in 2025, driven by labor, fuel, and maintenance costs. With each 1% increase in the contract worth approximately **\$25,000 annually**, it's crucial to consider options to reduce overall costs while still adhering to the contract's financial impact. On top of this increase, a **3.5% inflation rate** is also factored into the projections.

The following reductions are presented as a **menu of options**, allowing for flexibility in maintaining service quality while cutting costs. Each item on the menu offers savings that will reduce overall operating expenses without compromising the primary objectives of the Preferred Plan.

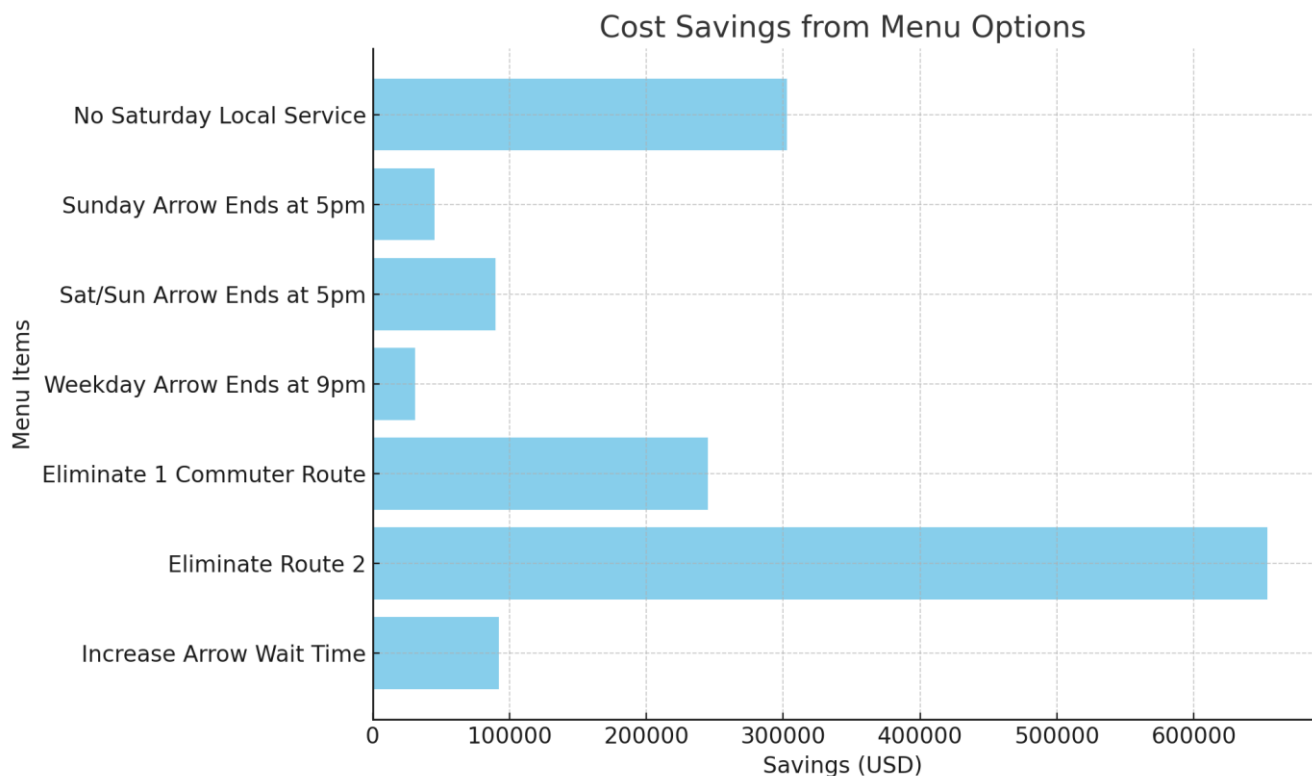


Figure 44 - Menu of Cost Reduction Options

Why the Preferred Service Plan is the Right Approach

The **Preferred Service Plan** has been designed to meet Roseville's growing demand for transit services while supporting future ridership growth. It strikes the optimal balance between providing high-quality service and ensuring operational efficiency across the board. While it comes with higher costs, this plan supports:

- **Increased accessibility** for riders, with more frequent service on Local routes and an expanded footprint for Arrow and Commuter services.
- **Future growth** will be achieved by laying the groundwork for more robust transit options in key areas, including the introduction of **Rapid Link**, a service that will become increasingly vital as the city grows.
- **Operational efficiency** by ensuring that services are scaled appropriately based on demand while reducing the burden on underperforming routes.

Given the forecasted **17% contract increase** (worth approximately **\$25,000 per percentage point annually**) and **3.5% inflation**, the Preferred Service Plan reflects Roseville Transit's commitment to providing robust service while staying adaptable to financial realities. This contract increase is inevitable, but it emphasizes the need to make strategic adjustments to ensure the system remains financially viable.

Cost Management through Menu Options

While the **Preferred Plan** comes with higher initial costs, it offers significant long-term benefits by expanding transit accessibility and building a foundation for future growth. By incorporating one or more of the cost-reduction options from the menu, Roseville Transit can tailor the plan to fit its budget better while preserving the most essential service elements.

These reductions allow for **strategic adjustments** without compromising the overall goal of improving service quality and accessibility. They offer an opportunity to reduce costs in areas where demand is lower, such as weekend and evening services, or by adjusting wait times on certain routes.

2. Unconstrained Scenario

In the **Unconstrained Scenario**, Roseville Transit operates without budget limitations, allowing for maximum expansion and service optimization. Operational hours increase significantly, and service enhancements, such as additional vehicles and more frequent routes, drive up total costs.

- Year 1 Cost: \$8,603,455
- Year 5 Cost: \$9,944,443
- Year 10 Cost: \$11,643,732

This scenario represents the full potential of the transit system, meeting growing demand with robust service options, including the full implementation of new services like **Rapid Link** and the expansion of **Arrow** and **Commuter** services.

3. Constrained Scenario

The **Constrained Scenario** reflects a **10% budget reduction**, requiring Roseville Transit to make strategic choices about which services to prioritize while still meeting the basic needs of the city's growing population. While the service levels are reduced compared to the unconstrained model, the system still expands incrementally over the projection period, albeit at a slower rate.

- Year 1 Cost: \$6,997,400
- Year 5 Cost: \$8,088,058
- Year 10 Cost: \$9,470,131

In this scenario, Roseville Transit must carefully balance service expansions and efficiency improvements with budget constraints, focusing on core services and high-demand routes.

4. No Increase Scenario

Under the **No Increase Scenario**, Roseville Transit operates with a flat budget based on current cost levels. In this model, the system does not expand operational hours beyond the current levels, meaning that service improvements and expansions are limited by financial constraints.

- Year 1 Cost: \$6,268,528
- Year 5 Cost: \$7,245,580
- Year 10 Cost: \$8,483,692

This scenario emphasizes efficiency, ensuring that the existing system runs optimally without increasing costs. However, it limits the ability to introduce new services or expand existing ones to meet growing demand.

5. Current Costs

The current operational costs for Roseville Transit are **\$5,679,832**, with projected Year 1 costs reaching **\$6,557,626** to reflect the upcoming 17% cost increase under the new 2025 contract. This increase accounts for rising labor, fuel, and maintenance costs, as well as inflationary pressures on transit operations.

Additionally, **Rapid Link** costs are projected at **\$1,520,000** in Year 1 and will increase steadily to **\$2,006,961** by Year 10, assuming the service continues after the grant expires.

CONCLUSION

The **Transportation 360 Recommendations** lay the groundwork for a future-ready transit system that aligns with Roseville's growth, economic development, and sustainability goals. As the city continues to evolve, it is crucial for public transit to adapt and expand to meet the needs of a growing and diverse population. This comprehensive set of recommendations outlines a clear path forward, focusing on improving service coverage, increasing frequency, and enhancing the overall rider experience.

The introduction of new services, such as **Rapid Link** and the expanded **Arrow and Commuter** services, will significantly improve connectivity and reduce travel times, offering residents more efficient and reliable alternatives to driving. Through careful analysis of **travel patterns, ridership projections**, and **public feedback**, these recommendations are tailored to address the unique needs of Roseville's population.

The phased **implementation plan** ensures a smooth and strategic transition, allowing for incremental changes that minimize disruptions while maximizing service improvements. By the end of the implementation period, Roseville Transit will be positioned as a modern, efficient, and sustainable transit system capable of supporting the city's long-term growth.

The recommendations outlined for Roseville Transit represent a comprehensive and forward-thinking strategy to enhance the city's public transportation network. These recommendations are grounded in data-driven insights, community feedback, and an understanding of the city's future growth trajectory. They aim to balance service expansion, operational efficiency, and financial sustainability, ensuring that Roseville's transit system can meet the needs of a growing population while maintaining high service quality.

While the **Preferred Service Plan** provides the ideal framework for these improvements, we also recognize the financial challenges associated with its implementation. Rising operational costs, driven by the projected **17% contract increase** and **3.5% inflation**, create a need for strategic adjustments to ensure the transit system remains financially sustainable.

To address these pressures, a **menu of cost-reduction options** has been identified. These options, such as eliminating underperforming routes, adjusting service hours, and optimizing on-demand services, provide a flexible approach to managing costs without sacrificing the key objectives of the plan. By selectively implementing one or more of these cost-saving measures, Roseville Transit can make the Preferred Service Plan more affordable while preserving its core elements.

The recommendations also highlight the importance of **right-sizing the fleet** to match ridership demand, transitioning to **zero-emission electric buses**, and expanding the **charging infrastructure** needed to support fleet electrification. These elements are not only aligned with California's environmental policies but also represent a crucial investment in the future sustainability of the transit system.

Looking Ahead: A Vision for Roseville's Transit Future

The transit network proposed in these recommendations is designed to accommodate the rapid growth and changing travel patterns within Roseville. By prioritizing service improvements, right-sizing the fleet, and investing in sustainable transportation options, Roseville Transit can remain responsive to community needs while adapting to financial realities.

The **Preferred Service Plan** is more than just a set of service adjustments; it is a strategic vision for how Roseville Transit can evolve into a more efficient, accessible, and environmentally sustainable system. Whether through expanded commuter routes, enhanced local services, or the introduction of the Rapid Link service, this plan lays the foundation for a dynamic, flexible transit system that will grow with the city.

In conclusion, the recommendations presented here reflect a commitment to building a modern and resilient transit system for Roseville. By adopting these recommendations, and implementing cost-saving strategies where necessary, Roseville Transit will be able to deliver high-quality service to its residents and support the city's growth in the years to come.